

3DworldTM

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THE INTERNATIONAL MAGAZINE FOR 3D ARTISTS

THE X FACTOR

How to cash in on next-gen games design

» Skills you need » People to know » Perfecting your showreel

MASTERING POSER

5-PAGE EXPERT WALKTHROUGH

ADOBE ATMOSPHERE

FUTURE OF 3D – OR DEAD DUCK?

3D COMPOSITING

EXCLUSIVE BILL FLEMING
SFX TUTORIAL

on the cd

- » Maya PLE dual-format demo
- » combustion 2 dual-format demo
- » DAZ3D characters
- » Atmosphere beta
- » Quest3D Pixel Shader Contest demo and content
- » Jesse Flores showreel
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- » Aardman's Stefan Marjoram's BBC Christmas idents
- » 20 Exhibition images
- » Supporting files and screenshots for tutorials

JEFFREY KATZENBERG

SPEAKS EXCLUSIVELY ABOUT
'REDEFINING ANIMATION' p16

"SOFTIMAGE®|XSI™ is leaps and bounds ahead of its predecessor."

:Tim Zaccheo, Senior Animator, Lola.



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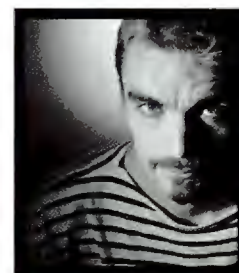
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editor's PERSPECTIVE

Some people do it by re-arranging the ornaments on the mantelpiece; others by turning the furniture to face true north. Animals do it by urinating over bushes. It's called marking your territory, and it's something we're all guilty of, to a greater or lesser extent.



As regular readers will have observed, mine is not the face you expect to see at the top of this page. In fact, there isn't normally a face at the top of this page at all. This can only mean two things: first, that their 3D World has a new editor, and, second, that he's going to make a few changes around the place.

Some of these changes will be obvious – we've moved the tutorials together to make them easier to find, for example, and upped the length of the popular Q&A section. Bill Fleming also makes a welcome return to the magazine with his masterclass on 3D compositing: his first in nearly a year.

And with the UK launch of GameCube set for early May, former editor Ed Ricketts will be casting his eye over the next-generation games market – and asking how 3D artists can find work there. We'll also be taking a critical look at *Adobe Atmosphere*: future of Web 3D, or dead on arrival?

But some of the other changes to the magazine are going to take a little longer – and that's where you, the readers, come in. It would be nice to say that magazine editors are gifted with the wisdom of Solomon, coupled with absolute precognition and an unfailing eye for detail. But, sadly, that's just not true.

So I need your help. If there's something new you'd like to see in the magazine – or something old you'd like to see more of – write in and tell me. Some of you have already been kind enough to do so (at jim.thacker@futurenet.co.uk or www.3dworldmag.co.uk/futurenet), and you can see the results on page 20.

And if you don't like the way that things are shaping up, the same goes double. Better a few angry emails than a magazine that fails to reflect the needs of its readers. So if I seem to have rearranged your articles, realigned your tutorials or, heaven help us, pissed all over your favourite section of the mag, do let me know. Please...

Jim Thacker
Editor

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3D
WORLD

Alias slashes Maya prices

The world's most sought-after 3D application has suddenly become 76% more affordable. Why, asked *3D World*?

BELOW Alias|Wavefront president Doug Walker outlines the reasoning behind the recent *Maya* price-cuts: "The world is going to need a lot more trained 3D artists over the next five to ten years," he said. "We made a commitment to drive innovation."

Artists and CG studios have been calling for it to happen for ages. And it finally has. Alias|Wavefront has cut the price of *Maya Complete* by 78 per cent from £6,360 to £1,499 (ex. VAT), while *Maya Unlimited* sees its price-tag slip from £13,560 to just £4,899. In an instant, the software used for movies like *Shrek* and

The Lord Of The Rings, not to mention countless television productions and top games software, is within reach of nearly every serious 3D artist.

Alias|Wavefront president Doug Walker revealed his company's new pricing strategy at a press conference held at the company's Toronto HQ late last month, with the prediction that the move will not



only encourage growth in the 3D industry but also present new avenues for 3D artists to pursue. With high-quality 3D content becoming a more economical option in general thanks to the price-cuts, Walker believes education and business are areas that will now find it easier to justify the use – and benefit – of 3D.

"I think that the world is going to need a lot more trained 3D artists over the next five to ten years," he told *3D World*. "I think that community is going to have lots of options for where they can work in the future. Film, video, games – yes – but also business and learning applications."

According to Alias, the price cuts will not affect continuing R&D work, which spans everything from 3D product design to presentation interfaces and high-resolution monitors. The company is in the process of moving all its development positions to Toronto, closing down its Santa Barbara and Seattle offices.

For Walker, the rationalisation spells savings on travel and office space, and working efficiencies with everyone in the same time zone: "From a pure innovation perspective, we made a commitment years ago and reinforced that in the last few weeks, to drive innovation faster in this business," he said. "I think you're going to have to drive innovation faster in the next five years and that's why we've made the move to collocate all of our research and development in Toronto."

SETTING A PRECEDENT?

By finally taking an initiative on prices, some in the industry are predicting that Alias|Wavefront will exert great pressure on other 3D software companies. As yet, however, there's no sign of price-cuts from the competition.

"We have no immediate plans to change our pricing," said Keith Russell, EMEA business manager at Discreet. "We think that *3ds max* is correctly priced, that



it offers great price performance, a fast learning curve and it has a great future ahead of it. We have maintained a consistent price point in the market while others have lowered theirs, which shows that ours was correctly priced."

Crushing the competition is not what A|W's move is about, said Doug Walker. "The plan is to grow more volume for this company but also for the marketplace. I think that 3D is going to be adopted in many more application areas than it's currently in over the next three to five

years. The bigger the community that we build for Alias, the more people we're going to have working with our future customers in business and in educational institutions."

While CG studios who recently bought licences for *Unlimited* at the old price may be cursing their bad luck, even they grudgingly agree that the reduced price is a good thing. At least their next round of seats will be significantly cheaper.

The price-cut does seem to have taken the industry by surprise. With the closure of the Santa Barbara and Seattle offices, industry rumours of a company buyout by, among others, Adobe and Discreet, were rife. Doug Walker was keen to quash such speculation: "I've heard lots of rumours. I've heard my company mentioned, I've heard other companies as well. But it's not going to happen."

CONTACT: www.aliaswavefront.com

THE INDUSTRY SAYS

STUDIO LIDDELL

"The *Maya* price-cut came as a bit of a shock. Being a diehard *3ds max* user, I first thought 'What's the catch?' But there doesn't seem to be one! Whether I'll be tempted to jump ship is a different matter. When *3ds max* is combined with the likes of *reactor*, *ShagFur* and *FinalRender*, it becomes exceptionally powerful, and still a lot cheaper than *Maya Unlimited* and *mental ray*, but I'm going to look into this one further."

Andy Jones, Studio Liddell

MAXON

"We're looking at what we should do. I think you can be certain you'll see some sort of reaction from us."

David Link, MD, Maxon UK

THE MILL

"Our initial thought was of disappointment. Only the day before (AIW) revealed they were cutting the price, we had purchased 10 licences in what we were told was the last day of promotional deal, whereby we could purchase *Maya Unlimited* for the same price as *Maya Complete*. We did this in good faith only to find the next day that they'd cut the costs, which meant in actual fact that we'd lost money. I think that with *Softimage|XSI* 2.2 looking to be a very interesting and workable product, Alias would appear to be giving them one last squeeze to retain their strong position in the market."

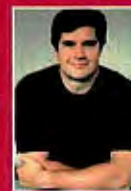
Stephen Venning, The Mill

HIGHEND3D.COM POLL

47 per cent of voters in a highend3d.com poll said the price cut was good news for the industry, 7 per cent weren't sure and 13 per cent said Alias|Wavefront 'is going down'...

The inside story

3D World talks exclusively to Alias|Wavefront president Doug Walker



3D WORLD: How do you expect your competition to react to this price-cut?

DOUG WALKER: It's an inflection point for the business and I think it's going to cause all of the vendors to take a look at what kind of strategy they might be able to deploy to develop their businesses going forward.

3D WORLD: Is your aim to crush other vendors in this market?

DW: That's not the plan. The plan is to grow more volume for this company, but also for the marketplace. I think that 3D is going to be adopted in many more application areas than it's currently in over the next three to five years.

3D WORLD: You say that innovation will be driven even harder over the next five years. Why?

DW: Because we're going to lead it. I believe we're the ones who are going to push it to happen faster. Somebody has to, and I think we'll be the people to do it. The other thing to remember is that we do have the relationships with all the big studios – it's not only the people who are looking for the most advanced features in the very high end of the business, but the people that need to move the science further and faster in order to differentiate their products.

3D WORLD: You expect the 3D market to grow because *Maya* is cheaper, but in what new areas are 3D artists going to be in demand?

DW: Every car in the world is designed with StudioTools, and most of the major consumer products are also designed with our software. Over the last couple of years we've been finding that those customers are looking for more ways to unlock the value of the digital assets that they've created. There are a couple of ways to [do that]. One is to take the digital assets and create animations, the other is to create interactive experiences. On the learning side – the same thing. I firmly believe what's going to happen is that curriculum will be created with interactive models and that they'll be shared. At this price, professors can actually start to do some things to develop curriculum.

Maya: the numbers

64 per cent	UK price cut for <i>Maya Unlimited</i>
76 per cent	UK price cut for <i>Maya Complete</i>
£899	Annual maintenance price of <i>Complete</i>
£1,049	Maintenance price of <i>Unlimited</i>
£1,049	Complete to <i>Unlimited</i> upgrade price until 28 June 2002
55,000	Number of trained <i>Maya</i> users graduating each year

Analysis:

Personal Learning Editions: are they as useful as their publishers would have us believe?

When Alias|Wavefront and Softimage both decide to hand out their industry-leading software packages free of charge, it seems churlish to criticise. But just how useful are these non-commercial editions? Will they genuinely bring professional 3D to the masses, or could it be that the launch of *Maya Personal Learning Edition* and *Softimage|XSI Experience* are merely grand gestures, or an attempt to curb the proliferation of home users working with illegal copies of the full-blown programs.

"Typically, many artists and aspiring artists never get the chance to see what's possible, because of time, perceived difficulty or accessibility to the latest and best technology – the *Softimage|XSI Experience* is designed to change that," says Softimage MD Michael Stojda. Certainly, it seems ideal for giving users a taste of what the software can really do, and the online registration to obtain a CD edition free through the post makes *XSI Experience* all the more tempting. But with the save function disabled, just how useful is it really?

Maya PLE (downloadable from the Alias|Wavefront Website) is similarly restrictive, adding watermarks to work and preventing the use of plug-ins. "The level of protection of the viewports in *Maya PLE* sounds a little draconian, but then I guess there's a need to protect the software," suggests Jim Bresnahan, a lead animator at Blue Sky Studios. "Some people are still going to go around the system, using illegal, non-protected software so that they have full functionality, but ultimately *PLE* has to be a good thing."

"I don't see who this is aimed at," says Jim Radford, head of 3D at the Moving Picture Company. "You can use the software to train yourself up, but if you're serious you want to get a showreel together and find work with a studio." And it's not as if *Maya* users who decide to make the leap from *PLE* to the commercial software can simply port their work over. "The file format can't even be read by the full version. That, plus the fact that you can't make use of third party add-ons, means it's only use is really for training people up."

Jim doesn't believe the two packages will have any effect on the way studios such as MPC recruit, either.

"People can learn how to use software by themselves relatively quickly, but it's knowing how to use a program in a practical situation that's valuable to a commercial studio. Studios want people with *real* experience."

Both Alias|Wavefront and Softimage are to be applauded for putting pro-level tools in the hands of aspiring 3D artists. But it remains to be seen whether the need to remove all commercial possibilities from *Maya PLE* and *XSI Experience* has undercut their educational value, making them little more than tantalising tasters for commercial packages that remain prohibitively expensive for the masses.

CONTACT: www.softimage.com, www.aliaswavefront.com

Two new versions of Houdini

Cut down and updated, Side Effects' app moves forward

Side Effects Software has launched a cut-down version of *Houdini*, its award-winning procedural 3D animation package, for under £2,000. *Houdini Select*, which retains the modelling, animation and rendering capabilities of its parent, is being targeted at games developers and small facilities.

"We're making Hollywood-level tools available to any 3D artist in the world," claimed Side Effects' general manager Tony Cristiano.

The release is accompanied by that of the latest version of *Houdini*, which goes on sale for \$17,000 (£14,500). *Houdini 5* features updated character animation tools and a brand new modeller, plus an integrated texture editor and game-inspired polygonal tools.

The once inscrutable user-interface has also been revamped to make it more intuitive,

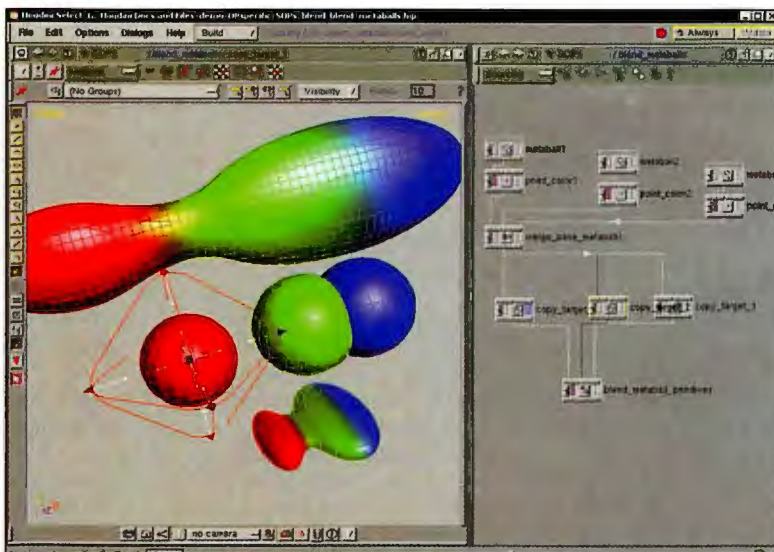
permitting artists to model and animate directly in the 3D view. "Historically, [*Houdini*] was perceived as inaccessible," commented Cristiano. "That's the worry we set out to address."

Audience reaction at the company's London launch event was generally positive, although some expressed scepticism over the much-vaunted upgrade path from *Select* to *Houdini*. Files created in one version of the software are fully operative in the other, but the cost of *Houdini 5* was felt to be prohibitive.

"It'll be useful for studios already using [full-version] *Houdini*," noted one attendee. "But I can't see the little guys buying it."

CONTACT: www.sidefx.com

You can read our reviews of *Houdini 5* and *Houdini Select* on page 70.



Discreet gets hot for Web 3D

Dedicated Web 3D animation package unveiled by Discreet

TOP PRESS: In a move that will see the company forging closer ties with Macromedia, Discreet has announced *plasma*, its new Web 3D animation package.

The tool, designed to create graphics for Web interfaces and interactive applications, enables users to transfer 3D content into Macromedia's market-leading *Director 8.5 Shockwave Studio* and *Flash MX* software. A built-in exporter also enables users to create fully-skinned characters in *Shockwave 3D* format.

Discreet has been quick to refute allegations that the new product is merely a cut-down version of *3ds max*. While *plasma* can load, but not save, .MAX and .3ds files, it has its own user interface and unique .p3d file format.

Plasma is expected to ship later this spring, price \$650. No details of UK pricing had been announced as this issue of *3D World* went to press. There are currently no plans to port the software to OSX or Linux.

CONTACT: www.discreet.com/products/plasma

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British Animation Awards

Cosgrove Hall and Aardman Animations are just two of 2002's winning contenders

BELOW Leigh Hodgkinson's *Novelty* (left) won the Paul Berry Award for Best Student Film, while Aardman's *Pintlings* (right) lost out to Sam Morrison's *4Q*. music.com for the Best Direction Of A Commercial gong



It didn't need a new Oscar category to demonstrate the incredible work currently being done in animation – the British Animation Awards (BAA) have been doing a great job of that. The introduction this year of three new categories – Best Music Video, Best International Short Film

and Best European Feature – raised the total number of awards on offer to 17. These included Best Children's Series, this year won by ITV for *Albie*, produced by Cosgrove Hall Production (profiled in issue 22 of *3D World*). Meanwhile, Gorillaz may not have nabbed a Brit Award, but the 2D rock

band did pick up the BAA Best Music Video award for their video *Clint Eastwood*. It beat Radiohead's *Pyramid Song* and Coldplay's *Don't Panic*, the judges remarking on its "wit, stunning choreography and

announcement of a joint winner in the Feature Film category. Aardman Animations' *Chicken Run* drew a tie with the distinctly less famous (in the UK at least) *Kirikou et la Sorcière* – a French

language tale for kids that impressed the judges with its "beguiling simplicity, gorgeous visual design, sensuality, infectious humour and its skill at

LITTLE-KNOWN GALIC FEATURE FILM *KIRIKOU* SCOOPED TOP SPOT FOR ITS 'GORGEOUS VISUAL DESIGN'

interesting combination of techniques." The judges also loved *Father and Daughter*, which won the Best Short Film award, gushing that "Once in a while a film comes along that defines itself as an instant classic... words are superfluous..."

Perhaps the biggest surprise of the night came with the

continually surprising the audience." *Kirikou* has been sold to 40 countries around the world, but has yet to find a distributor in Britain. Surely this month's award success will change that.

For a full list of nominees and winners, check out the BAA Web site.

CONTACT: www.awards.fsnet.co.uk



DIGITAL ARTS FESTIVAL 2002

We announce the UK's biggest and – in our not-entirely-unbiased opinion – best new 3D event

Traditionally, Computer Arts LIVE – the industry trade show organised by our sister magazine *Computer Arts* – has been a major fixture in the UK's design and creative calendar. And traditionally, *3D World* has had its own small part to play in the proceedings.

But this year, the event has undergone a massive transformation, including a new title and format, and will be bigger and better than ever.

The Digital Arts Festival 2002 will take place in London from 8-10 October and now comes complete with its own high-end

3D conference. In addition to 3D animation, the festival itself will focus on illustration, web and graphic design and digital video/audio. It also includes seminars from creative professionals, exhibits and live tutorials from software and hardware manufacturers,

content producers and trainers, plus interactive installations and many more special events.

Further details of the festival will be announced in the magazine and on our Web site closer to the time. Put the date in your diaries now...

CONTACT: www.3dworldmag.com

Sydney, Australia
MA in Digital Media

The Australia Film, Television, and Radio School (AFTRS) offers a post-grad two-year MA in Digital Media. Students can shape their course to suit their

specialty – computer animation, visual effects or titles design. There are some core units that all students following the animation and effects strands must complete. These include digital imaging and data networking, desktop video

compositing, Maya 3D animation overview, advanced compositing with combustion and Inferno, and animation pre-production. Other core units include modelling, lighting and rendering, and visual effects. The latter involves blue-screen

effects work. Desktop digital video focuses on the use of Final Cut Pro.

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3D
courses



Lordy, it's an Oscar

Shrek and *Lord Of The Rings* garner top effects statuettes

Power can be held in the smallest of the things,' runs the tagline for *The Lord Of The Rings: The Fellowship Of The Ring*. And the humble pixel, the building block for director Peter Jackson's incredible visual epic, bears witness to this. *Fellowship* didn't win the Best Picture Oscar (big boo), but there was little surprise when it scooped the award for Best Visual Effects on red carpet night.

"We wanted to weave a tapestry of heightened reality with the special effects on *Lord Of The Rings*," said Richard Taylor, president of WetaFX, the New Zealand-based digital effects company that made *Fellowship* what it was. Accepting the award with him were visual effects supervisor Jim Rygiel, special effects director Randall William Cook and visual effects consultant Mark Stetson. A 100-strong team helped them to create the *Fellowship*'s 500-plus FX shots.

The movie also got the little gold man for Music (Score) and Cinematography.

Meanwhile, *Shrek* made history, albeit with less emotion than Halle Berry, by being the first movie ever to win in the new Best Animated Feature Film category – an addition to the Oscar line-up acknowledged gratefully by its producer Aron Warner, who accepted the award.

And arguably the best quote of the evening came from the not-so-famous actor Nathan Lane, who presented the Oscar to Warner. "I know dear old Walt Disney would be smiling now if he wasn't frozen solid," he quipped sensitively.

Elsewhere, the kooky Pixar short *For The Birds* nabbed the gong for best Short Film – Animated. It was directed by Ralph Eggleston and shown before *Monsters, Inc.* on its theatrical release.

Sadly, there had to be some runners-up, too. Which, in this case, meant *Jimmy Neutron: Boy Genius*, nominated in the Best Animated Feature category. You can read our interview with its director, John A. Davis, in next month's issue of *3D World*.

CONTACT: www.oscar.org, wetafx.co.nz

EVENTS

3-8 JUNE

Annecy 2002

Le festival international du film d'animation, and a great excuse for a trip to France. Annecy claims to be the biggest international animation market, offering an exhibition and festival together with awards and a job fair.

www.annecy.org

1 AUG

Rushes Soho Shorts Festivals

You still have a little time to enter your short film to the Rushes Soho Shorts Festivals. There are five categories of awards: Short Film, Newcomer, Animation, Music Video and Title Sequence and Idents. Winners are announced on 1 August and will have their work shown in a variety of Soho locations.

www.sohoshorts.com/

25-26 JUNE

DV Expo East

This New York exhibition gives you the chance to see the latest products and technology from a wide variety of companies, including post and graphics facilities, software developers and DV production outfits.

www.dvexpo.com/east/

21-26 JULY

Siggraph 2002

Need we say more? If you're in the 3D 'biz' and you haven't heard of Siggraph, the world's largest and possibly loudest graphics show, there's no hope for you. Although covering all areas of graphics, it's predominantly 3D-led and features top speakers, a massive exhibition, where all the majors launch their new projects, plus the chance to network like hell.

www.siggraph.org

LIGHTWAVE SEMINAR

Anyone wishing to explore the inner secrets of *LightWave 7* will be interested in a series of seminars taking place during April, May and June. The FX Academy/Learn *LightWave* roadshow is currently touring the US, but makes a fleeting visit to Bath, home of *3D World*, for two two-day sessions on the 28-29 and 30-31 of May.

For roughly £130, you receive two days of expert training by Lee Stranahan (Editor of *Keyframe* magazine and one of the leading lights in the *LightWave* universe), plus a supplemental CD containing practical training materials, demo software and various goodies.

The seminar covers all aspects of *LightWave*, including modelling, lighting, character animation and rendering, and highlights many of the latest features in version 7. For more information, or to book your place, visit the official Web site.

CONTACT: www.learnlightwave.com

NEW 3D WORLD ART CONTEST

One of the beauties of modern PC graphics cards is their support for per-pixel and vertex shading: real-time 3D features once found only in offline rendering.

To celebrate this fact, *3D World* has teamed up with NVIDIA, manufacturer of the new GeForce 4 graphics card, and Dutch software developer Act-3D, to launch a new contest open to all computer artists throughout the world.

The competition – to create an interactive artwork making best use of the advanced shading functionality in *Quest3D*, Act-3D's multimedia authoring package – runs until 18 June.

In addition to being showcased in Issue 28 of *3D World*, winning entries will receive a variety of 3D-related goodies, including a high-end graphics workstation, NVIDIA GeForce 4 Ti cards and free copies of the *Enterprise* version of *Quest3D*.

You'll find a special contest version of *Quest3D* on this month's cover CD, and entry instructions on page 92. More information is available on the contest Web site.

CONTACT: www.quest3d.com/contest

the nominees

BEST ANIMATED FEATURE FILM

• *Jimmy Neutron: Boy Genius* (Paramount and Nickelodeon Movies) Steve Oedekerk and John A. Davis • *Monsters, Inc.* (Buena Vista) Pete Docter and John Lasseter • *Shrek* (DreamWorks) Aron Warner

ACHIEVEMENT IN VISUAL EFFECTS

• *A.I. Artificial Intelligence* (Warner Bros.) Dennis Muren, Scott Farrar, Stan Winston and Michael Lantieri • *The Lord Of The Rings: The Fellowship Of The Ring* (New Line) Jim Rygiel, Randall William Cook, Richard Taylor and Mark Stetson • *Pearl Harbor* (Buena Vista) Eric Brevig, John Frazier, Ed Hirsh and Ben Snow

BEST ANIMATED SHORT FILM

• *Fifty Percent Grey* (A Zanita Films Production) Ruairi Robinson and Seamus Byrne • *For The Birds* (A Pixar Animation Studios Production) Ralph Eggleston • *Give Up Yer Aul Sins* (An Irish Film Board/Radio Telefís Eiréann/Arts Council/Brown Bag Films Production) Cathal Gaffney and Darragh O'Connell • *Strange Invaders* (A National Film Board of Canada Production) Cordell Barker • *Stubble Trouble* (A Calabash Animation Production) Joseph E Merideth

On track with new Boujou

Two new iterations for industry-acclaimed camera tracker

With its *Boujou* application used in numerous commercials, music videos and movies, including *The Lord Of The Rings* and *Black Hawk Down*, Oxford-based 2D3 has announced two new versions of its camera-tracking software. Together, *Boujou 2* and *Boujou VE* target entry-level TV production and high-end film work, with platform support now extending beyond Windows to include Linux editions.

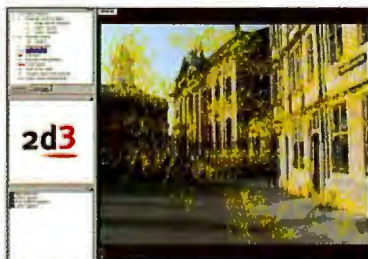
Boujou 2 is 2D3's flagship application, providing new tools for monitoring extreme material, enabling continuous tracking even when objects are obscured by atmospheric effects or changes in lighting levels. New functionality includes precision intervention capabilities, feature-location and editing tools, a lens distortion tool (the first ever fully automatic lens correction facility) and

animated matte creations tools for isolating individual shot elements.

Boujou VE is designed for studios with less intensive requirements. Its more streamlined featureset, plus integration with *3ds max* and *After Effects*, make it more suitable for TV production.

2D3 has yet to confirm price points for *Boujou 2* and *Boujou VE*, but shipping is expected before the summer.

CONTACT: www.2d3.com



PICTURE COURTESY OF: © Nicholas Wu, Airbus Project



To the gmax with 150,000 users

Discreet's game-design app gains new ground

Discreet has announced that more than 150,000 people have now registered to use *gmax*, its games design and editing program for Windows 98 and 2000. Designed for use with titles created with *gmax dev* for *3ds max 4*, *gmax* enables users to modify games by constructing new add-on packs, models, textures and animations.

Gamers have long embraced titles that encourage modification. The trend started with 'mod' files for id Software games such as *Doom* and *Quake*, but has now evolved into a full-blown development community boasting much expertise, creativity and initiative.

Of course, for gamers to use *gmax*, the games software itself needs to be *gmax*-enabled, which means developers must configure their software around the *gmax dev* base technology. While Microsoft and EA have both put their weight behind the system, modifiable titles remain thin on the ground, with only *Microsoft Flight Simulator 2002 Professional Edition*, *Command & Conquer: Renegade*, *Trainz*, *Microsoft Train Simulator* and *Quake III Arena* currently sporting *gmax* functionality.

However, *gmax* was only launched a little over a year ago – a mere blink in game development time. Given the proliferation of studios using *3ds max*, and the fact that the *gmax* mod-making community is already well established, it's almost certain that more *gmax*-enabled titles will follow over the next two years.

CONTACT: www.discreet.com

PICTURE COURTESY OF: © Smoke & Mirrors/Gerard de Thame Films for Newman Harty



Gallic apps appeal

REALVIZ offers further support for Mac OS X

REALVIZ, the French company renowned for its Image Processing Factory range of apps, has announced plans to expand its support for the Mac OS X. Following the successful port of *Stitcher*, it's now set to bring *ImageModeler 3.0* to the new platform this September. Geared toward image-based modelling, this latest version provides a wide range of tools for the creation of objects/scenes based on photographic images, with data export support for *Maya*, *Softimage*, *3ds max*, *LightWave*, *Shockwave*, *Wavefront (OBJ)*, DXF and STL formats.

In the meantime, REALVIZ is also set to launch *SceneWe@ver*. Designed for multimedia work, *SceneWe@ver* creates 3D environments from stills, panoramic photos and 3D objects, and outputs in *Macromedia Director 8.5* and VRML file formats. Available for NT and OS X, it's due out in May.

CONTACT: www.realviz.com

GET FREE CDs FROM 3DBUZZ

When most folk have something that thousands of other people want, they try to sell it. Not so Jason Busby. The US animation tutor, and founder of the 3D Buzz Web site, is giving his platform-specific 3D training videos away for free.

Already the subject of rapturous reviews in *Animation World Magazine* and *CG Channel*, the CDs have been causing quite a stir in the industry.

"We've had 4,000 subscribers [to the video training magazines] in less than 3 weeks," Jason said. "Things have been moving so fast, it's tough keeping up!"

Next month, you'll be able to find one of Jason's tutorials exclusively on our CD. In the mean time, check out his Web site and see what all the fuss is all about...

CONTACT: www.3dbuzz.com



Softimage: game on!

Three new game-development packages announced at GDC

Softimage took advantage of the Games Developers' Conference, held in San Jose this March, to unveil three of its latest products: *Softimage|XSI 2.02*, *Softimage|3D 4.0* and the *XSI Platform Development Kits*.

Softimage|XSI 2.02 updates the flagship non-linear animation system with a range of new features specifically aimed at the creation of real-time 3D, including real-time shader architecture for editing and viewing shader effects directly from game engines via *XSI* viewports. The latest edition of *XSI* also includes enhanced polygon modelling and character animation tools, plus a data pipeline geared towards open content creation throughout game development.

The latest version of *Softimage|3D*, the character animation solution already used by developers such as Nintendo, also piles

on the games developer-friendly features. Additions include multiple UV texturing, advanced vertex colour authoring and interactive editing of shader normals.

As the name suggests, the *Platform Development Kits* are geared toward efficiently creating content tailored to the capabilities of specific games platforms. The PDKs make it easier to work *XSI* software into interactive media pipelines through File Tool Kit, while the customised version of the *XSI* Viewer provide accurate real-time 3D previews.

Prices start at \$2,995 for *Softimage|3D*, and \$4,995 for *Softimage|XSI*. The *Platform Development Kits* are still in the alpha stage. Final shipping is expected this summer, although the File Tool Kit component is already available for free download via Softimage's Website.

CONTACT: www.softimage.com

new products

LIGHTWAVE 3D

NewTek has dropped the price of the meaty *LightWave 3D* by \$900. This brings the popular package to the new, more wallet-friendly and accessible price of \$1,595.

www.lightwave3d.com

SOFTIMAGE/XSI

Softimage has released *Softimage|XSI Experience CD* set: an accelerated training and demo CD package for *XSI 2.0*. The CD includes the full feature-set of *Softimage|XSI 2.0 Advanced* system and is free.

www.softimage.com

REALSOFT 3D 4.5

Just released this month, *Realsoft 3D 4.5* introduces hundreds of new features, including improved skeleton control, global illumination and caustics tools, as well as new post effects.

Upgrade for \$150.

www.realsoft3dusa.com

SKETCHUP 2.0

SketchUp 2.0 from @Last enables you to create, view and modify 3D ideas quickly and easily. Ideal for drawing straight lines and precise arcs, the software comes on CD and costs \$495 (or you can download it online for less).

www.sketchup3d.com/

ANIMO 4.1

Version 4.1 of the popular *Animo* 2D animation package offers improved support for 3D data, enabling animators to apply a consistent cartoon look to an entire scene that contains 2D elements and 3D models created in *Maya* or *3ds max*. *Animo Professional* costs £3,950, while the advanced *Principal* version will set you back £6,000.

www.cambridgeanimation.com

SMOOTHKIT

Re:Vision Effects has just launched *SmoothKit*, a filter set that provides more effective image-smoothing capabilities, complementing the basic blurs provided by your host application. *SmoothKit*'s emphasis is on the precise control with no compromise on image quality – you can smooth out the skin of someone's face, for example, while retaining the details of the hair that hangs in front of it. You can also use *SmoothKit* to reduce image defects. It's priced at \$169.95.

CONTACT: www.revisionfx.com

MOVIEX FAMILY EXPANDING

AIST MediaLab AG is introducing eight new plug-ins as additions and expansions to the *MovieX* products. The plug-ins produce enhanced special effects, such as morphing and warping, and thanks to the open plug-in architecture of *MovieX* software, you can tailor each one to your own individual requirements. How's that for customisation?

MovieXplosion, *MovieLightning*, *MovieParticles*, *MovieMorph*, *MovieHighlight*, *MovieWarp*, *MovieTracker* and the drawing tool *MoviePaint* are available from AIST and range in price from 49-149 Euros.

CONTACT: www.aist.com

FREE ALCHEMY ARTISTPACK

Intrinsic Graphics, the developer of the *Intrinsic Alchemy* game development platform, is making its *Alchemy ArtistPack* for Discreet's *3ds max* available as a free download on the Web. The free version makes available the artist's tools from the commercial version and enables you to export *3ds max* art to the PC without any programming headaches. The full version enables you to export to multiple consoles for optimum flexibility. Download the free version from Intrinsic's Website (works with *3ds max* 4.2 or higher; 256MB RAM recommended).

CONTACT: www.intrinsic.com



Creative acquires 3Dlabs

Graphic card leaders snapped up by PC multimedia giant

Creative Technology, famous for its SoundBlaster soundcard and other PC multimedia hardware, has bought 3Dlabs, the market leader in graphics accelerator solutions. The combined company hopes to increase its share of the graphics market. "We see great opportunities to leverage 3Dlabs' high-end professional market leadership into higher volume PC desktop products that satisfy power gamers' insatiable demand for faster graphics," said Sim Wong Hoo, chairman and CEO of Creative. Creative has been a shareholder in 3Dlabs since 1994.

CONTACT: www.creative.com, www.3dlabs.com

LightWave heading for 7.5

Luxigons and Powergons ensure NewTek's 3D app is more refined than ever

The latest point upgrade to NewTek's *LightWave 3D* should now be available for download (it was in final beta testing as *3D World* went to press). This highly-anticipated update not only promises to rectify remaining niggles with *LW7*, but also include a raft of sought-after features and improvements in multithreaded speed.

The parenting of lights, nulls and emitters in Layout is now replaced by the creation of Luxigons and Powergons in *Modeler*. Luxigons are polygons which are described in terms of light sources, while Powergons are user-definable proxy objects which you can convert to bones, nulls, and emitters. Inside Layout, *Modeler* also gains D-Storm's *Magic Bevel* as a permanent resident, as well as *Bandsaw Pro*, *Bandglue* and *UV Spider*.

The most obvious advances in Layout are *Motion Mixer 2.0*, *Expression Builder*, faster bone

deformations, and multi-bounce radiosity (up to eight bounces). *LightWave* now automatically writes multi-pass renders as *Photoshop* layers, too, and can output in the rich pixel file format (RPF), which finally enables 3D compositing in *combustion*, *After Effects*, et al.

Other noteworthy features include a soft shadow generator with transparent and coloured shadows, a user-friendly update to *Virtual Darkroom* with pre-set film stocks, alpha channel lens flares, 640 x 480 render preview, and real-time OpenGL motion blur.

Of interest to cross-platform studios is the release of the Duo Dongle, which enables users to render across platforms with a single licence. The update is a free download, but NewTek will charge a nominal fee for the additional manual and CD release. For more details, check out their Web site.

CONTACT: www.newtek.com

BATTLE OF THE SEXES

Recreating people's insides is one way for a team of five to spend four months. The Moving Picture Company (MPC) did just that when they created scenes for UK Channel 4's upcoming *Battle Of The Sexes*. The rendering was done in *Maya*. "We built a whole 3D person, but instead of showing the skeleton we showed all the veins, heart and lungs," explains MPC 3D producer Asher Edwards. "It took three months to build. We were constantly trying to get the model down to such a size that we could open it and tweak it without problems." *Battle Of The Sexes* airs on C4 later in the year.

CONTACT: www.moving-picture.com



Bitten by the Xbox

Framestore relies on a phalanx of digital midges to promote Microsoft's Xbox

Adding itself to the crop of digital beasts currently appearing in commercials is a host of full-blooded digital mosquitoes created by Framestore CFC for Microsoft's latest Xbox spot, *Mosquito*. The ad began airing on terrestrial TV last month and tells an amusingly nonsense tale of how these pesky bloodsuckers were once a source of musical pleasure in the wilderness – until a voice told them to 'get a job', whereby they stopped singing and became the malaria-carrying blighters they are today. Framestore CFC created a range of midge models in *Maya 4.0*, with seven levels of varying detail to accommodate the different levels of close-up required. 2d3d's automatic tracking software, *Boujou*, helped realise a number of shots, including the tracking of an assembly line of mosquitoes sucking the blood from the arm of a hospital patient. Nice.

CONTACT: www.xbox.com, www.framestore.co.uk

BSKYB LETS LOOSE LI'L RED BUTTON MAN

L'I'l Red Button Man is the cartoon alter-ego of a button on a remote control. Ull Meyer Studio created this rocking little guy as part of a brief to create a 3D character that would promote the interactive features of BSKYB's Digital Broadcasting. The character was to be a composite of some classic British rock icons.

Traditionally trained animators created the 3D animation, where the button jumps to life from the remote control and gyrates on the television-come-rockstage in *Maya*. The promo is consciously cartoon in style, created using traditional painting techniques and drawing styles, before being rendered and composited in *Maya* and *After Effects*.

"We applied our expertise in classical animation to bring this digital character to life," explains Ull Meyer's CGI supervisor, Leo Sanchez. "The computer is a great tool but what makes this project work so well is the performance our classical animators injected into the character."

CONTACT: www.ullmeyer.com

Do the twist

Prestigious award for Levi's striking ad

It may be old, but the Levi's *Twist* commercial has dated as well as the jeans it's promoting, picking up Best Visual Effects Prize at the Creative Circle Awards last month. The award went to that stable of medal winners, The Mill, who created the advert's limb-twisting, body-bending effects.

Although it's decidedly American in feel, the ad was actually shot just outside Cape Town in South Africa. The twisting of legs, arms and feet in ways not natural to humankind was achieved using full-blown 3D models of the limbs and by exaggerating the movements of the flesh-and-bone models using *flame*. *Flame* was also used to composite the back-to-front body/head effect of the guy leaning against the car.

CONTACT: www.mill.co.uk



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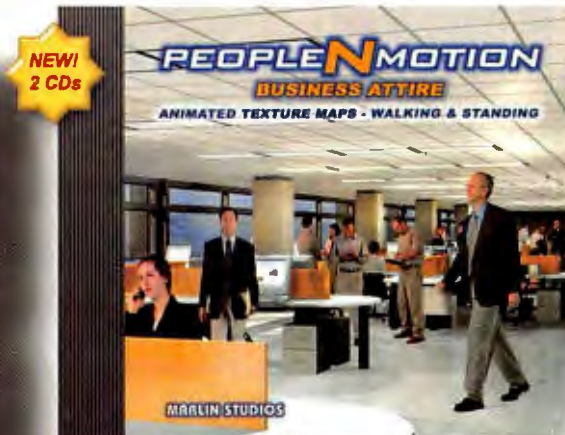
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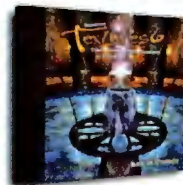
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Jeffrey Katzenberg



And for its next trick, DreamWorks will “redefine the animation genre...”

Company co-founder – and legendary industry mogul – Jeffrey Katzenberg talked to *3D World* about his latest animated venture, *Spirit*

BY ED RICKETTS

Anyone scouring the recent *Shrek* DVD would've been intrigued to see the trailer for DreamWorks SKG's latest animated venture – *Spirit: Stallion Of The Cimarron*. Intrigued and possibly a little puzzled, because *Spirit* is about as far from the *Shrek* style as you can possibly imagine. In fact, it almost looks (whisper it now) like a Disney film.

Spirit tells the story of a horse born in the days of America's Old West, just as the land is being colonised. As *Spirit* grows from foal to full horsehood, he becomes the leader of his herd, is captured by cowboys, befriends an Indian brave, falls in love and has all manner of stirring adventures. There's no sarcastic dialogue, no pop culture references and no indie soundtrack – by and large, this is about as traditional an animated flick as you can get.

Except the technology behind it certainly isn't. Early in March, Jeffrey Katzenberg (the 'K' of SKG – and producer of both *Chicken Run* and *Shrek*) hosted a preview in London to explain the film's approach, and why he's so excited about it.

RIGHT DreamWorks SKG Jeffrey Katzenberg: “*Spirit* uses the most advanced 3D technology ever – even beyond that of *Shrek*.”

Katzenberg, a rather earnest man, but given to bouts of dry wit, claims that *Spirit* uses “the most advanced 3D technology ever – even beyond that of *Shrek*.” Not that you'll notice it at first. *Spirit* is purposefully designed to be a seamless blend of CGI and traditional 2D animation: most of the backgrounds, the movement and effects are CGI, while the characters are hand-drawn and animated.

TRADIGITAL

Katzenberg compares traditional 2D animation to a handwritten letter, while 3D is (for now at least) more like an email. “No matter how hasty or meaningless it is,” he says. “You always get a sense of personality with handwriting... It's just more human. And, currently, nothing can beat the human touch of 2D animation.”

Spirit, he continues, is DreamWorks' attempt to redefine the genre: “We wanted to reinvent classic 2D animation and combine the best of 2D with 3D.” He's even coined the term ‘tradigital’ to describe it (although, somewhat fortunately, he hates the word as much as *3D World*). But why horses? “Because they're the most difficult animal on earth to animate properly,” explains the

“WE'RE VERY PROUD OF THE ACCURATE WAY THEY MOVE IN THIS FILM... IT WAS ALWAYS INTENTIONAL TO HAVE THE HORSES AS REALISTIC AS POSSIBLE”

DreamWorks maestro. “We wanted a challenge, and we're very proud of the accurate way they move in this film.”

And just to make things extra difficult for themselves, none of the animal characters actually *talk*. “It was always intentional to have the horses as realistic as possible,” he says. “We wanted to convey emotion through acting.”

This, of course, makes explaining the plot a tad difficult, so *Spirit* relies on those two old standbys, a narrator (Matt Damon) and a bunch of songs, courtesy of Bryan Adams.

DreamWorks has been working on *Spirit* for around four years now, and according to Katzenberg, technology has advanced to a stage where a purely CGI film can now be produced in much the same time as a wholly 2D hand-animated film. From the preview sequences *3D World* was privy to, it looks set to just as big a success as *Shrek* – although in a decidedly younger and more mainstream market.

We'll be covering the tech behind the film in much greater depth in forthcoming issues – don't miss it...



LEFT It's totally tradigital! A new blend of CG and traditional animation – plus non-speaking main characters – promises to make *Spirit* a cut above your average animated adventure.



DreamWorks' *Spirit: Stallion Of The Cimarron* is released on 24 May in the US and 5 July in the UK. For more – and to view the trailer – see www.dreamworks.com

All alone in a cruel sea.... but surrounded by Cloth

CLOTH 3DS MAX plug-in allows you to create highly realistic animation of clothes on characters and fabric on objects. Simple to use with fast reliable calculation, **CLOTH** delivers production quality dynamic cloth simulation.

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Visit our web site to request a demo of **CLOTH** or download the fantastic 'A Brief Good Knight' movie.

'Knight on Ship' image from the movie 'A Brief Good Knight' by Ed Taylor and Damien Johnson (also animators of Tiny Planets). Tunic, sail, flag and sea all animated with CLOTH.

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PERSPECTIVE

...and in the darkness bind them

Isn't it about time that design and special effects crews got the public and critical recognition they deserve?

BY PHIL DOBREE

I'm sure I wasn't the only one who came out of *The Lord Of The Rings: The Fellowship Of The Ring* staggered by the movie's visual effects. But while *The Fellowship Of The Ring* swept the board at both the Oscars and the BAFTAs, snapping up a total of nine awards, little attention – gongs for special effects notwithstanding – was paid to its design, which was executed to an equally astounding level.

Unquestionably the biggest advance made in popular film over the last 20 years has been in the fields of visual effects. Admittedly, this has often been at the expense of decent storytelling. But when the story and direction are good, the result – as witnessed in *The Fellowship Of The Ring* – can be breathtaking.

Yet while there is a general expectation among the public (and, sadly, even Film Academy alumni) that any fantasy film will quite naturally boast astounding and seamless visual effects, there is still little appreciation of the creative women and men who make it all possible. The balance of recognition has to be wrong when the actors,

marvel at in the cinema – and receive little credit for their efforts. Financially, our industry seems to be crippled by an inability to look after itself. Wages have either fallen or remained stable for as long as I can remember, and there seems to be an expectation of perfection at little extra cost. Even on exclusively animated features, such as the wonderful Pixar films, not many could tell you the names of the animators (or even the director) working on the project – although everyone could tell you who voiced Woody.

Is it right that animators slogging in front of a computer screen for years should earn what a voice-over artist reaps in a day or two? Cameron Diaz has reputedly been paid £7 million for her voice-over on *Shrek 2*. On a live-action film, actors are the biggest expense; on an animated film, the animators' salaries amount to a fraction of the budget.

Which begs the question: What makes *The Fellowship Of The Ring* the spectacle it is? Is it the stunning visual effects and design? Or is it the individual stars involved? I know what my answer would be. In my opinion, you could have substituted many of the actors for relative unknowns and still had a great movie.

Similarly, would *Toy Story*, *Shrek* or *Monsters, Inc.* have been anything without the supreme skills of the TDs and animators? This situation is, of course, unlikely to change as long as the public continues to flatter star egos and not

“Is it right that an animator slogging away in front of a computer screen should take years to earn what a voice-over artist reaps in only a day or two?”

producers and directors on such projects enjoy all the glory, while the design and effects teams – who largely make such films what they are – sit unrewarded in the shadows.

These animators and designers are working around the clock, on a fraction of the wages the films' stars enjoy, to create what you and I

reward the special effects people. Hollywood uses celebrities to sell movies, not digital artists and effects technicians. After all, it's in the interests of the film's producers to use their stars' popularity to sell mediocre product, when it's often the visual effects that make such films popular.

PHIL DOBREE used to be head of 3D at Refinery UK. He is currently concentrating his energies on Jellyfish Pictures (www.jellyfishpictures.co.uk), where he's a founding partner.



INTERNATIONAL ANIMATED
FILM FESTIVAL

ANNECY 2002 3-8 JUNE • MIFA 5-8 JUNE

TALK TO US ONLINE: www.3dworldmag.com/forum

have your say

Your chance to pick our brains, air grievances and ask for help. Send an email to 3dw.views@futurenet.co.uk

do try. But bear in mind that there are probably fewer than 100 dedicated 3D software packages on the market. When you exclude the ones that we've already had on the cover disc, the ones that are still on version 1.x releases, and the ones that cost over £2,000 (fewer than there used to be, thanks to A|W's latest announcement: see page 6), but still a significant number, you can see that we've got our work cut out!

SUBJECT: FEEDBACK

1: In issue 24, you asked for opinions on 3D World and ideas for content. Well, here goes. First, would I be willing to spend a little extra on a DVD version every three or four months? Definitely, providing the content was worth it. And by 'worth it', I mean high-resolution versions of quality 3D animations, or collections of models and textures that you could use professionally (if I want something that can only be used non-commercially, I can grab it off the Web). And what about

some really in-depth – and I'm talking seriously *deep* – HTML tutorials that would take up far too much space in the printed magazine.

Which, by the way, I think is fine. The writing, the layout, the image quality are all top-notch. The only problem is, as I've already noted, the 'surface' quality of some of the content. You're trying to cover as wide a readership as possible, and have limited space when it comes to printing. So don't print.

By that, I mean use the CD/DVD to give people the depth that they want. One very good way of presenting tutorials, which seems to have

been adopted by many 3D books, is to teach by means of a real-life project. I'm sure that, for many professionals, a side thread on the theoretical possibilities and artistic merit of techniques would stimulate the grey matter far more than the main 'hand-holding' text of the tutorial.

Brian Bradley,
www.geonome.co.uk

Thanks. Brian. And thanks to everyone else who has written in or posted in the forum. As I said in the Editor's Welcome, this month, please keep your suggestions coming. We can't make a decent magazine without them.

We're currently investigating the possibility of using the cover disc to provide more tutorial content, and you should see the results in future issues.

And to all the people who have emailed us to request more full products on the CD: well, we

SUBJECT: MAYA

2: I'm a relatively new Maya user, having recently received my seat for version 3.5.1 on OS X. After a rigorous few months of getting to know the user-interface (I previously used Softimage|3D and Cinema 4D), I can happily say I'm very impressed and will enjoy using Maya for the foreseeable future... Or will I?

There have been a growing number of rumours about the future of Alias|Wavefront, starting with the Maya Completely Unlimited offer [Maya Unlimited for the price of Maya Complete] and culminating in A|W's recent decision to slash the price of Complete to £1,449: a reduction of 77 per cent. Both Apple and Discreet are now said to be in talks to buy the company. The latter's interest is particularly interesting, given that nine months ago Richard Kerris, former director of Maya Technologies, left to work for Apple.

So what is the future for Maya? Honestly, I don't know. If Apple or Discreet buy A|W, Maya could go either way. If Discreet buys the company, we could see Maya and 3ds max slowly merge, which personally I'm afraid of. If Apple buys it, the Mac version

CONTACT 3D WORLD

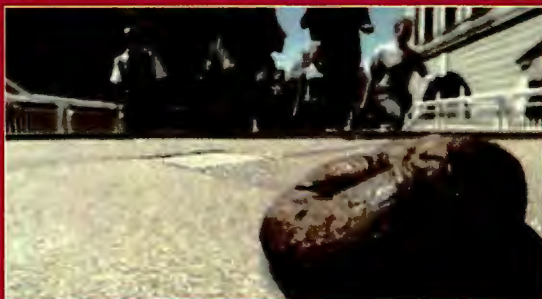
Letters, opinions and questions:
3dw.views@futurenet.co.uk

News leads and industry stories:
3dw.news@futurenet.co.uk

Images for the Exhibition gallery:
3dw.exhibition@futurenet.co.uk

Technical and creative queries:
3dw.qanda@futurenet.co.uk

Contributions to our cover disc:
matt.gallimore@futurenet.co.uk



1: Nice work if you can get it? Your dream job may be working for Weta Digital, but your first job may be polishing a turd, says Renato Lazzaroni.

of Maya will get a boost, which – much as it would benefit me personally – also makes me fear that the other platforms could be phased out.

It could be another interesting month watching what happens next. Maybe you guys at 3D World have some idea?

Sam Clark, www.polaris-digital.com

It certainly has been an exciting month for Alias|Wavefront. Which is why we dispatched Garrick Webster to Toronto this month to secure an exclusive interview with A|W president Doug Walker. You can read the results on page 7.

As for those takeover rumours, if anyone from Apple or Discreet would like to get in touch, we'd be more than happy to take the call. Your anonymity is guaranteed...

SUBJECT: FAECES

3: An ad for a popular chain of shoe stores is currently airing on Belgian television. It features (brace yourself) CG canine excrement bouncing around on a crowded pavement.

The facetious faeces is having fun jumping into the path of the passers-by to be stepped on, except when someone with the said brand of shoes comes by. And in case you're wondering, yes, it is photorealistic.

Regardless of the, er, 'artistic value' of this creation, it is invaluable as a reality check for those who are considering a career as CG artists. That astonishing opening battle sequence from *The Lord Of The Rings: The Fellowship Of The Ring* is the assignment you may dream of. Modelling,

texturing and animating a turd is what you may actually get.

Renato Lazzaroni, Brussels, Belgium

Um, a good point, well made. As Renato points out, you can view the advert online at www.brantano.be/brantbe/fr_BE/html/campagnes/audvid.htm, following the link marked 'Le trottoir'. Just make sure you're not eating lunch while you do so...

SUBJECT: MORE OLD SH...

4: When I read Bill Fleming's comments on art and 3D [Views, issue 18], I thought: 'Thank God. At last someone had the guts to say what I've been thinking for a long time.' But although I agree with what he says, there is a dilemma concerning the nature of art.

My point is that there is not one definition of art, but many – some of which contradict the others. Bill Fleming says: "to be so general with the definition of art leads to the ludicrous." Well, to my horror, I discovered that the Italian artist Piero Manzoni not only canned his own faeces ('Artist's Shit', 1961) but that the cans are now being sold for \$30,000.

And therein lies the confusion. If a can of shit can be regarded as art, why not my 3D model of a car? After all, a true work of art simply starts with a conscious purpose around which the artist incorporates graphic or plastic elements in order to provoke an emotional state in the viewer.

So how important is it to study traditional art? The question you have to ask yourself is: 'Will my work be remembered 100 years from



2: Nice work if you can get it. Why bother polishing, replies Piero Manzoni? Just stick it in a can and sell it for \$30,000...

now?" And to answer that, you have to look back at the artists of 100 years ago to see what was it that made their work so memorable.

All masters have studied the work of previous masters. 3D is primarily a visual artform and therefore all the principles of traditional art apply to it: from painting to sculpture, from photography to cinematography. Sure, rules are made to be broken. But there is a rule about breaking rules – you must know what the rule is before you can break it.

Reza Behjat, Down Under

For what it's worth, my own opinion of Manzoni – who also signed live models and balloons ('Artist's breath'), on the grounds that anything that bore his signature became art – was that he was a better showman than he was a theoretician.

And apologies to Reza, the scope of whose arguments suffered under the editorial scissors. I'm not sure I'd agree with the comment that "All the principles of traditional art apply to 3D," though. Surely the beauty of a new art form is the freedom to pick and choose from your antecedents, discarding those elements which prove unhelpful?



from the forum

Have your say or get advice in our 3D World forums at www.3dworldmag.com/forum

SUBJECT: FACIAL MEASUREMENTS

Dave Stewart:

With regards to 3ds max and facial measurements [issue 23], the solution doesn't need any complicated CAD package. Our max has it all: a bit of your standard animation fare, augmented by some basic scripting...

- Create two new Point objects from the Create/Helpers panel, and a new Section object from the Create/Shapes panel.
- Align and parent the Section object to one of the Point objects.
- Assign a Look-At controller to the Section object and specify the other Point object as the target (assign a third Point object as a Look-At Axis if more rotational control is needed).
- Now, using the point objects, you'll be able to pick start and end points on the mesh.
- Once you've done this, create a new Spline object using the Create Shape button.
- Select and trim the new spline to fit our start and end points.
- Type into the Listener "curveLength \$" and check the result displayed. Easy!

It's nice that people are having a go at answering potentially difficult questions, but it's a shame that you didn't check their facts first. Perhaps you could forward this to the person in question before they spend cash on a package they don't need!

3D World replies:

Consider our fact-checker sacked forthwith. (Oh, hang on, that's me...) Biggerveggies, don't rush out and buy Pro/Engineer; it'll all work in max. Honest.

SUBJECT: LESS GLOSS, MORE PAGES

DigitalSteve:

How about dumping the glossy paper so we can have more pages? No, don't scream, I'm not mad. Consider this: most of the submitted content, 3D images and stills were built to be viewed on screen, not in print. Personally, I'd rather look at a 1,500-pixel image on screen than a 3,000-pixel image reduced to page width for printing. Artwork in the mag could be more in the form of a contact sheet to show what's on the disc. And how about encouraging the users to submit stuff like tutorials, even if it only gets on the CD? And how about finding some innovative film stuff that doesn't involve Pixar/Discreet? And a 'rumours' column might be nice. And how about a 3D World collaborative readers' project? And ... [Snip! Ed.]

3D World replies:

Tell you what, why don't we just put all the content on the CD and attach a free magazine to the back of it? Thanks for your suggestions, folks. Keep 'em coming...

Atmospheric



pressure



Just over a year ago, Web 3D was dead, a creative graveyard littered with the corpses of VRML and Boo.com. Since last spring, however, two industry behemoths have been battling it out to develop a new kind of 3D protocol that will redefine the global Web experience. But while Macromedia's *Shockwave 3D* format and its attendant *Director 8.5* authoring tool have already left their mark on a host of big-name sites – Cisco, BBC, FedEx and LEGO among them – Adobe *Atmosphere* has languished in beta testing. Why, we asked Adobe product evangelist, Peder Engrob? Over the coming pages, Engrob – and other leading industry figures – discuss *Atmosphere's* prospects.

BY STUART DREDGE



come out with Macintosh support," he explains. "There's clearly a lot of creative Mac users who would be interested in this technology. The other thing is the rendering. *Atmosphere* worlds are pretty easy to download, and on a fast machine you get a pretty good result. But we'd like to support hardware rendering better."

Not that Adobe has been idle during this fallow period. It's continued to release regular beta updates, with new features incorporated as a direct result of user feedback. "We're currently pushing to launch a retail version of *Atmosphere* in the summer," continues Engrob. "The product is what's important here, so we're very much focused on the engineering rather than the marketing side."

But before it can begin a serious assault on the Web 3D market, *Atmosphere* must face three core challenges.

CONTENT: FINDING A NICHE

Firstly, Adobe needs to figure out what kind of online content *Atmosphere* is best at producing – and then pitch it to designers in those fields. The Web 3D market can be loosely divided into three areas: objects, gaming and communities. The first concerns the modelling of 3D objects, most often in an

e-commerce context. The second is self-explanatory, while the third relates mainly to chat-rooms and explorable 3D worlds.

Peder Engrob is clear about *Atmosphere*'s own niche. "It's not game-focused and it's not object-focused," he says. "It's community-focused. We're not competing directly against the objects people, or against *Director*. We're focusing more on how you build communities on the Web in 3D, with people having their own personalised avatars. That's where we think the fun is, and there are very few other companies competing in that space."

Engrob is also keen on the idea of community-based learning, citing online museums as an example. It's no

As a first-generation product, *Atmosphere* began life as a free public beta, released to creatives in March 2001. The idea was to encourage designers to play around with the 3D Web authoring tool, then use their feedback to bolster a planned release in Summer 2001. Within a month, more than half a million people had downloaded the appropriate Builder tool, providing Adobe with a considerable source of feedback. Then, strangely, the projected commercial release for *Atmosphere 1.0* slipped to the Autumn. And then again into 2002...

So why has *Atmosphere* still not been released? We put the question to Adobe product evangelist Peder Engrob: "We need to

"*ATMOSPHERE* OPENS THE WORLD OF 3D WEB CREATION TO THE AVERAGE INDIVIDUAL, RATHER THAN RELEGATING IT ONLY TO THOSE WITH A POWERFUL AND EXPENSIVE COMPUTER MODELLING PROGRAM. ITS DOWNSIDE LIES MAINLY IN THE FACT THAT IT'S STILL VERY MUCH A DEVELOPING TECHNOLOGY."

GEORGE LIPPERT, *Adobe Atmosphere* contest winner (North American section)

"WE CAN'T EXPORT FROM REALVIZ PRODUCTS LIKE *SCENEWE@VER* TO *ATMOSPHERE*, ALTHOUGH WE CAN TO *SHOCKWAVE 3D*. IT'S BEEN A COMPLETELY DIFFERENT APPROACH. UP TO NOW, THE QUALITY OF *ATMOSPHERE*'S RENDERING HAS ALSO BEEN VERY POOR."

PIERRE COHEN, EMEA Sales and Marketing Director, REALVIZ (www.realviz.com)

co-incidence that one of the initial *Atmosphere* worlds Adobe demonstrated was a museum – the company has identified the e-learning market as a key area for growth. Conventional Web sites can show this kind of content using a mixture of text and pictures, but when it comes to 3D sculptures and installations, users want the content to be more immersive – complete with the community element.

"In *Atmosphere*, you can browse around the museum, walk around high-quality 3D artworks, and then discuss what you're seeing with other users," he says. "Plus, you're able to identify yourself. The avatar market has been one of the funniest experiences for me. It's been very entertaining to see what people have come up with to represent themselves."

REPUTATION: WINNING BACK DOUBTERS

Adobe's second challenge is to win back the designers and businesses scared off by previous Web 3D failures. These include traditional Web designers stung by the old Web 3D hype, modellers and animators from the offline 3D market who so far have resisted the lure of online work, and the all-important clients who might foot the bills for Web 3D projects. The first group are by and large happy to experiment with

Atmosphere, because it's a new way to fulfil ambitions stunted by VRML. But the second group – the offline animators and modellers – are tougher nuts to crack.

"When they heard about VRML a few years ago and tried it, they had very bad experiences," admits Engrob. "So they gave up on 3D for the Web. Often, these people are experts in 3D, but don't necessarily know a lot about the Web. Now, though, with *Atmosphere*, you can import things from *Maya*, *3ds max* or whatever, and add them to whatever world you're creating. It's much easier."

And persuading clients to actually part with their cash could prove an even stiffer challenge. Funding for any kind of Web

Atmosphere Statistics

MANUFACTURER

Adobe

WEB

www.adobe.com/products/atmosphere/

LAUNCH DATE

Summer 2002

CURRENT VERSION

Build 67

PRICE

N/A

SIZE OF PLUG-IN

4MB

MINIMUM REQUIREMENTS

- **Builder**
Pentium or faster processor, Windows 98/2000 or Millennium, 64MB of RAM, 50 MB HD, 1,024 x 768 screen resolution, 16-bit colour
- **Browser**
Pentium or faster processor, Windows 98/2000 or Millennium, 32MB of RAM, 14MB HD, 16-bit colour, 56K or faster modem, IE4.01 and above, or Netscape Navigator 4.6 and 4.7

EXAMPLE SITE

www.hamonrye.com/atmosphere

PROS & CONS

- Easy to use
- Effective
- Huge browser plug-in
- Beta version still not available for the Mac
- Still in beta testing

content is currently thin on the ground – and trying to raise finances for a relatively unproven area of Web investment more difficult still.

"A lot of companies are still scared about anything to do with the Web, and it's traditionally been difficult to make revenue from 3D projects online," agrees Engrob. "But I do think a lot of companies would like to have a profile on the Web, and to introduce people to their content and products in 3D. That's why I think there's finally light at the end of the tunnel for products like *Atmosphere*. That's why Adobe is entering the market at this quite late stage. We couldn't have done this five years ago, because bandwidth wasn't at the place we're at today, and the technology simply wasn't advanced enough."

And Adobe has an ace up its sleeve: a fourth audience which, Engrob believes, could put *Atmosphere* in a strong position – students. The company is making a concerted effort to deliver *Atmosphere* into the hands of design students, even pitching it as an accessible introduction to 3D modelling. "You can create a basic 3D world in a day," he says. "Teachers like it because it's Web-based and easy to understand, yet has the same concept as high-end 3D applications, such as *3ds max*. Because it's not competing in any way with that, it makes a good introduction."

»

ATMOSPHERE RESOURCES

Web sites offering everything from *Atmosphere* tutorials, FAQs and advice to avatar skins, templates and textures

<http://sifter.org/atmo/>

www.adobe.com/products/atmosphere/samplefiles.html

www.atmosphereworlds.com/

www.atmospherians.com

www.dmu.com/atmosphere/atmosx.html

www.roce.org/atmosphere.html

www.saraproft.lu/pages/3D/bryceAER.html

"OF COURSE, YOU CAN'T COMPARE THE CURRENT BETA BUILD WITH A TOOL LIKE *3DS MAX*, BUT THAT'S NOT WHAT *ATMOSPHERE* WANTS TO BE. IT'S MORE LIKE A SCENE BUILDER, WHERE YOU CAN EASILY PUT TOGETHER OBJECTS AND TEXTURES TO FINALLY LIGHT THE WHOLE SCENE AND PUBLISH THE RENDERED WORLD."

MAIK LUDEWIG, designer, IT Quadrat (www.it-quadrat.de)

"IT PROVIDES A HIGH-LEVEL, INTERFACE-FRIENDLY TOOL FOR ARTISTS TO BUILD AND EXPLORE 3D CONTENT ON THE WEB, WITHOUT THE NEED FOR COMPLEX PROGRAMMING. OF COURSE, THE CURRENT BETA VERSION IS STILL TOO WEAK TO BUILD COMPLEX 3D SCENES, BUT IT WILL TAKE TIME TO EVOLVE."

LI JIN, Adobe *Atmosphere* contest winner (UK section)

...get the students to create a small 3D world and put it on the Web, and then move to 3ds max if they want to do something very complex."

BANDWIDTH: THE HEADACHES

But even if Adobe can get the content right and educate people in the virtues of Web 3D, a third major problem remains: bandwidth – namely, the size of the 3D worlds created using its tool, and that of the *Atmosphere* browser plug-in itself. Too big, and it could chug out visitors' systems; too lightweight and it could be worse than useless.

Adobe has made great efforts already to solve the first issue: intelligent caching. When you download an *Atmosphere* world, the first information to arrive is the basic 3D shapes. Once they've arrived, you can start moving through the environment while the other elements – textures, lighting effects and sounds – stream in.

The browser issue, however, remains. Weighing in at a 4MB – compare that to *Shockwave's* 696K – *Atmosphere* makes for a lengthy download, given that most home users are still using standard 56K dial-up connections. Not a problem, maintains Engrob. "It's not so much a question of the size of

the plug-in," he says. "It's more a question of whether you want it. Bandwidth is becoming less of an issue because of broadband, so it's more about how much stuff you want to put on your machine. Every time you put on a new plug-in, your computer gets more complicated. So the file size is less of an issue than what it will do to your machine."

It is therefore vital that Adobe not only delivers the browser into people's hands – but that it gets them to actively install it, too. Much of the success of Macromedia's *Director 8.5* is based on the high penetration of its *Shockwave* plug-in – which, in turn, results from a comparatively easy installation process. Adobe knows all too well that users need to be persuaded that

Director Statistics

MANUFACTURER

Macromedia

WEB

www.macromedia.com/software/director

LAUNCH DATE

Now available

CURRENT VERSION

Director 8.5.1

PRICE

\$1,199 (£833)

SIZE OF PLUG-IN

696K

MINIMUM REQUIREMENTS

- Director 8.5
- (PC) Intel Pentium II or higher, Windows 95/98/2000/NT4/Me, 64MB RAM, 100MB HD, 256-colour monitor capable of 800 x 600 resolution, DirectX 5.2 or OpenGL, 3D accelerator (Mac) 63 or higher, OS 8.5/8.6/9.0 and 9.1, 64MB RAM, 100MB HD
- Shockwave Player (PC) PII or higher, Netscape 4.0 or greater, Microsoft IE4.0 or above, AOL 4.0 or above (Mac) 63 or higher, Netscape 4.0 or above, Microsoft IE4.5 or above, AOL 4.0 or above

EXAMPLE SITE

www.bbc.co.uk/science/space/solarsystem/

PROS & CONS

- Much existing content
- Small browser plug-in
- Industry staple

Atmosphere-powered content is relevant enough for them to install the browser. Which, of course, depends on the quality of the content.

Atmosphere's sister application, *Acrobat*, may help it win points here: "More than a million people are downloading that every single day," says Engrob. "What we did with the SVG viewer [for Adobe's new Scalable Vector Graphics file format] was simply to include it in the *Acrobat* download. Of course, that could be done with *Atmosphere* as well."

CHALLENGING TIMES

But will it all be too late? To date, Macromedia has by far the upper hand. Its *Shockwave 3D/Director* combination has penetrated the Web with astonishing swiftness, while Adobe still struggles to attain a capable beta state. For *Atmosphere* to regain lost ground, it needs a critical mass of content – rich worlds, created by talented designers, that create a real buzz among users, and inspire others to follow suit. It needs the support of the Web industry itself – a fickle, nervy beast with purse strings pulled to breaking point. And it needs a blossoming development community. In this respect at least, Adobe is doing well, fostering a user-base primed to provide

detailed feedback, and wooing punters with flagged links to *Atmosphere*-rich sites. This clearly echoes Macromedia's successful open public stance while developing its *Flash* tool.

This summer should finally see *Atmosphere 1.0* primed for release – over 12 months after Macromedia took to the track. Could Adobe have jeopardised success in Web 3D in its quest for perfection? For anyone interested in online design, the coming year is certainly going to be an interesting one.



Formerly Features Editor on design industry bible *Cre@teOnline*, Stuart Dredge is now putting the finishing touches to his book, *Web 3D: New Perspectives*, published this Autumn by Laurence King.

"THERE'S NOTHING NEW HERE. THIS KIND OF SOFTWARE HAS BEEN CHANGING HANDS FOR THE PC SINCE 1995 – REMEMBER WORLDS INC? NO-ONE'S YET WORKED OUT HOW TO MAKE MONEY FROM IT, THOUGH. WAKE ME UP WHEN IT'S CROSS-PLATFORM."

MICHELA LEDWIDGE, 3D animator, TheQuality.com

"ATMOSPHERE'S MOST IMPRESSIVE FEATURE IS ITS AUTOMATIC GENERATION OF REALISTIC RADIOITY LIGHTMAPS. NASA PUT IT TO GOOD USE RECENTLY FOR A TRAINING EXERCISE FOR THE MARS MISSION. THERE'S ALSO GOOD SUPPORT FROM THIRD-PARTY COMPANIES. ITS BIGGEST DRAWBACK IS THAT THERE'S NO MAC VERSION AT THIS POINT."

JOEY JULIEN, interactive 3D designer

ATMOSPHERE IN ACTION

To get a feel for the best 3D work currently being done online, visit the winners of Adobe's first *Atmosphere* design contest

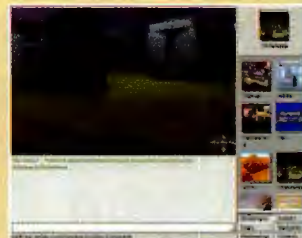
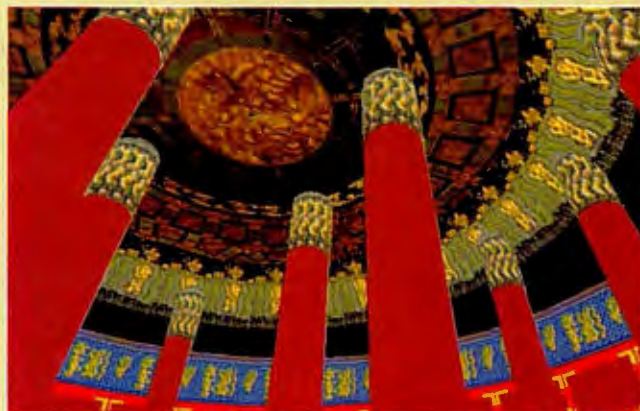
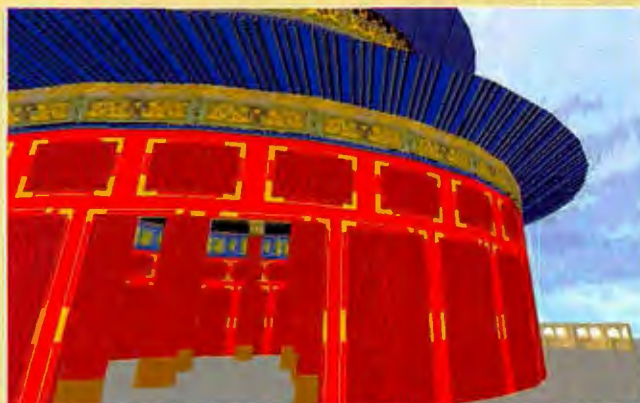
Towards the end of 2001, Adobe announced the winners of its first *Atmosphere* contest, set up to promote the best worlds on the Web. In the UK, Li Jin took top prize for her *Heaven* world (<http://pers-www.wlv.ac.uk/~ln6716/temple/TempleofHeaven.htm>), while George Lippert's *Dark City* (www.hamonrye.com/atmosphere) earned its creator the American vote.

Li Jin's virtual environment (right) is a model of The Temple of Heaven, a real location in Beijing, China – where, nearly 600 years ago, emperors paid respect to the gods and prayed for prosperity and peace.

The building Li Jin chose was Qi Nian Dian, which means the Hall of Prayers for Good Harvests: "It was an attempt to do some work to converge innovative 3D computer graphics technologies with art and culture broadcasting," explains Li. "It's been my dream for a long time. The rapid development of the Web has already begun to foster collaborative information discovery and visual exploration."

An employee of Ham On Rye Technology (www.hamonrye.com), George Lippert spends his working day building stereoscopic animations for VR goggles, distributed to cinemas in amusement parks. *Dark City* began life as an excuse to tinker around with *Atmosphere* at work. "Since our product is virtual reality, I figured that a cool VR world online would be a great benefit," he says. "At the earliest stages, it began merely as the interior of the Dark City Diner. The exterior was going to be a series of planar images outside the windows, but as I continued to explore the possibilities of *Atmosphere*, it evolved. I added more buildings, streets, signs... Then taxicabs popped up... Eventually, the outer boardwalk, docks, lighthouse and other areas came into being."

Li now has ambitions to use *Atmosphere* to create content ranging from ancient civilisation revisualisation to e-commerce. Meanwhile, George is working on a new series of ten worlds, using JavaScripting to create a more game-like environment.



"ADOBE POTENTIALLY HAS SOMETHING GOOD WITH *ATMOSPHERE*, BUT THEY'VE DONE NO MARKETING OR PROMOTION FOR IT. INTERNALLY, [THE COMPANY] DOESN'T HAVE A CLUE ABOUT HOW TO GROW WEB 3D, ALTHOUGH MACROMEDIA IS THE SAME WITH *SHOCKWAVE3D*."

LARRY ROSENTHAL, Cubeg.com

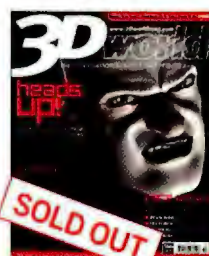
"ON PAPER, *ATMOSPHERE* MAKES SENSE: EVERYBODY'S TALKING ABOUT 3D FOR THE WEB THESE DAYS, AND EVERYBODY'S INTO INSTANT COMMUNICATION. BUT THE PROOF OF THE PUDDING IS IN THE EATING. ONLY IF IT PROVES CHEAP ENOUGH, EASY ENOUGH AND COOL ENOUGH WILL *ATMOSPHERE* TAKE OFF."

GRAEME AYMER, News Editor, [CreateOnline magazine \(www.createonline.co.uk\)](http://CreateOnline magazine (www.createonline.co.uk))

Missed an issue? Well, take out a subscription, then! (See page 38 for details)
But if it's just the one copy you're after, take your pick from the issues below



ISSUE 01 July 2000
Our launch issue. Bryce 3D (full product) on the CD; features on Dinosaur and Starship Troopers; Blue Sky profile; 50 max tips, plus reviews of Maya 3.0, LightWave 6, Cinema 4D 6 and SoftimageXSI. ORDER: TDWB0001



ISSUE 06 Dec 2000
Marlin VR (full product) free on the CD; feature on Digital Animations; Jeremy Engleman profile; Jurassic Shark feature; 50 tips for Cinema 4D; reviews of Face Works and Smells Like Almonds 2. ORDER: **SOLD OUT**



ISSUE 11 April 2001
A Taste of Maya 3 on the CD; Project Eden feature; Hannibal feature; first Exhibitionist feature; Bill Fleming explains skin textures; reviews of trueSpace 5, FILMBOX 2.7, D Sculptor and more. ORDER: TDWB0011



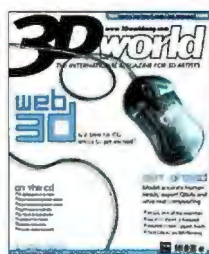
ISSUE 02 Aug 2000
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ISSUE 15 Aug 2001
Cinema 4D XL 7 demo on the CD; Final Fantasy feature; C4D XL 7 tutorial; Ben Smith on video theory; Lost Boys Games and Cats and Dogs profile; reviews of Maya 4, Electric Image Universe, IBM Spaceball 4000 and ELSA Gladiac 920. ORDER: **SOLD OUT**

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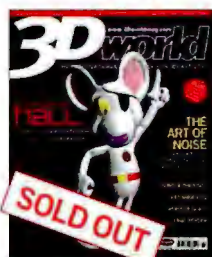
ISSUE 16 Sept 2001
Amorphium (full product) plus ZBrush and AXEL demo free on the CD; package design house Theseus profiled; Ron Thornton of Foundation Imaging interview; AXEL tutorial tips; reviews of Elsa Gloria III, ZBrush 1.23 and Bryce 5.
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gmax, Red Eye Studio mocap files, natFX and Thunder (both PC) demos; Lost Boys Studios profile; 3D CG and photo-realism feature; huge Maya tutorial; motion capture tutorial; review of 3DBOX S2 workstation.
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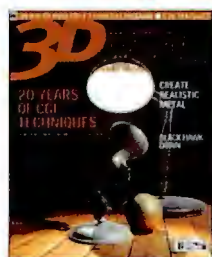
ISSUE 17 Oct 2001
 Demos of Boujou, form+Z RenderZone RenderCity and Vectorworks; feature on BBC special effects for its Space series; behind the scenes of Band of Brothers; LightWave tutorial; reviews of Director 8.5 and Boujou.
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Avatar Labs (PC trial), Poser Pro Pack, plus 30 bonus Exhibition Images on cover CD; how to make realistic glass tutorial; Lord Of The Rings special effects feature; reviews of Final Render and Avatar Lab.
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LightWave 3D 7, Cinema 4D XL and Bryce 5 demo on the cover CD; 3D on the Web feature; interview with Swedish CG whizzes Filmtecknarna; in-depth Cinema 4D tutorial; reviews of AXEL and Movie 3D.
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PIXELS 3D 3.7, Terragen, D Joiner demo, and 539 Ground Zero textures on the cover CD; Black Hawk Down effects lowdown; full reviews of mental ray 3.2 for Maya, Vue d'Esprit 4 and Dell Precision M40 laptop.
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ISSUE 19 Dec 2001
 50 Urban Jungle: Inner City textures and Vue d'Esprit 4 (PC only) demo on cover CD; FrameStore talks Walking With Beasts; professional LightWave tips; first full review of Softimage XSI 2.0 and LightWave 7.
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ISSUE 24 April 2002
Electric Image Universe 4.0 demo (dual version) and 220 photographic textures on cover CD; effects feature on US hit Ice Age; 12-page masterclass on character animation; reviews of After Effects 5.5 and MatchMover Pro 2.2.
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ISSUE 20 Xmas 2001
 112 Infinity Textures, 50 Urban Tiled Textures, 50 Urban Jungle Textures, plus WireFusion 2.0 (PC) demo; feature on Monsters, Inc. and Pixar; lighting in 3D tutorial; reviews of Maya 3.5 (Mac) and World Builder 3.0.
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ISSUE 25 May 2002
Maya Personal Learning Edition, combustion 2 demo and Poser models on cover CD; Ed Ricketts on finding work in next-gen games design; Bill Fleming 3D compositing tutorial; reviews of Houdini 5, Houdini Select and Cinema 4D ART 7.
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IN ISSUE 26

THE GREATEST 3D PACKAGE OF ALL TIME IS...

We reveal what the 3D industry *really* thinks of the tools of its trade

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INSIDE THE TIME MACHINE

HOW DIGITAL DOMAIN CREATED THE CG SHOTS

C.O.R.E. DIGITAL PICTURES

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THE

Twenty years ago, spotty teens the length and breadth of the country were marvelling at the capabilities of Sinclair Research's ZX Spectrum, the computer which spawned a zillion games and a thousand and one programmers. Running at 3.54MHz, boasting 48K of RAM (for rich kids), and with a screen resolution of 256 x 192 in eight colours, it was yours for £175.

This month, Nintendo's GameCube launches in the UK. Its PowerPC processor runs at 485MHz, it has 24MB of system memory and 16MB of texture memory to accompany the dedicated graphics chip, which boasts a top resolution of 640 x 480 and 16.7 million colours, and it costs just £165... Things have come on a bit, haven't they?

FACTOR

Twenty years ago, games were designed and programmed by one person. These days, a modern console game – be it for the PlayStation2, Xbox or GameCube – commands teams of up to 30 people, each with their own dedicated job. And many of those jobs are graphics-related: modellers, animators, texture artists, level designers, conceptual artists... the list goes on. What all this means is that the potential for jobs for artists in the console market has just gone exponential. Now more than ever, developers are crying out for talented, creative 3D people to help them design games. And why shouldn't you be one of them? If you've ever wondered just how to break into a market that's more lucrative than the Hollywood film industry, turn the page...

BY ED RICKETTS

"EVEN FOR A MERE ARTIST, A LOVE AND UNDERSTANDING OF GAMES IS ESSENTIAL"

1980s David Braben's *Elite* was – and still is – a staggering achievement, considering the hardware constraints.

Today's consoles are technological marvels. All three of the 'next generation' systems – PlayStation2, Xbox and GameCube – boast incredibly powerful hardware designed to do just one thing: chuck graphics around at incredibly high speeds. And while a PC or Mac may have vastly superior processing power, you can't buy one of those for £165.

Such specialised hardware requires specialised programming; even now, development teams are only just harnessing the full power of the PlayStation2. Texture memory formats, fill rate, bus speeds and so on must all be wrestled with to extract the most from any console.

Each system has its proponents and detractors among developers, but if you're looking to get a job in the console graphics industry, it's useful to know a little about the way each one works.

So which of the three is 'best' for graphics? It's a question that's dreaded by just about anyone in the know, because as

usual the answer is 'It depends' – each system has its own distinctive strengths and weaknesses.

TEXTURE TANTRUMS

For instance, the PS2 has acquired a reputation for being rather difficult to program – and for good reason. It uses a very complicated internal system, consisting of a CPU (the Emotion Engine), plus two Vector Unit co-processors. It's these co-processors which are the key to the PS2's potential – and yet they require the most effort to understand and use properly.

The two maths co-pros are designed to take care of 'menial' arithmetic tasks, such as setting up polygons and getting ready to draw, because they're much faster at these repetitive operations than the general-purpose CPU. The trick is to assign the chips these housekeeping tasks while simultaneously feeding the main CPU with the real meat of the game, such as taking care of artificial intelligence.

However, this is not a simple process, and demands considerable patience to exploit properly. Which is why the first generation of PS2 games were rather underwhelming graphically; the developers simply didn't know how to use these co-pros effectively – or didn't use them at all.

Another thorn in the PS2's chunky side is its lack of texture memory. The system has 4MB of video RAM in total – a tiny amount by any standard, but particularly when compared to the GameCube's 24MB and the potential 64MB of the Xbox. Like the video RAM on a standard PC or Mac graphics card, this memory has to store *all* data destined for display. Not just textures, but frame buffers, polygons... the whole caboodle. Consider that just one 512 x 512, 24-bit colour texture takes up 768K on its own (without any compression whatsoever) and you're in trouble pretty quickly.

Fortunately, the PS2 does have the ability to use its main 32MB of system memory for textures. You could, for example, use 2MB of video RAM for foregrounds and 2MB of main RAM for backgrounds, and swap between the two. But this is another complex process and a rather processor-intensive one at that.

Such problems – and all three machines have their own foibles – aren't impossible to work around. They simply take time,

10 steps to success

Monica Crisp of Change Ltd – a games industry recruitment agency whose clients include Sony, Acclaim Arts – reveals her 10 top tips for getting that all-important first job in 3D www.change-job.com

For animation jobs, animating a human is again a good idea. They'll want to see good simple movements: walk/run/jog cycles, picking up something heavy and so on. Try to have your character demonstrate emotion, too: happiness, sadness, lethargy...

PlayStation 2

FEATURE

3D world

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FACTFILE

MANUFACTURER Sony

UK LAUNCH DATE

24 November 2000

TECH SPECS 295MHz Emotion engine, 32MB system memory, 24K L1 cache, 16K scratch pad RAM, 2.1 MIPS, 6.2GFLOPS, 2.4GB/s system bus, 3.2GB/s graphics bus

GRAPHICS SPECS Sony GS chip, 4MB video memory, 150MHz, 15 million polygons per second (estimated real-world), 32-bit colour processing (24-bit colour output)

PROS

- Widely supported • Massively hyped
- Plenty of titles in development
- Very powerful custom CPU



experimentation and ingenuity on the part of the developers to circumvent. Anyone who played some of the later games for the Speccy will remember being amazed at how far some programmers could push it.

WORDS OF PREY

One developer which is aiming to do just that is Prey Digital Studios, a small UK company currently in the throes of producing its first title, *Stung!*, an FPS played from an insect's point of view. Being developed initially for the PC, the game is also set to appear on all three consoles.

Although Prey as a company is new, its various members – one programmer and four artists – have all been in the industry for many years, and worked on numerous titles for the PlayStation, Game Boy Advance and Dreamcast, among others.

"Most of these titles, like *VR Sports Powerboat Racing*, *Renegade Racers* and *Aqua GT*, were racing games in one form or another and never really satisfied our inherent urge to kill," explains Clive H Jones, Prey's creative director. "With all of us being huge fans of FPS shoot-'em-ups, we decided to go it alone and start to make the kind of games we actually *wanted* to make."

Clive sees the PS2's idiosyncratic design as more of a challenge than a problem. "The texture limitations on PS2 are exaggerated slightly," he says. "Admittedly, it is tight, but with a decent memory manager and its form of texture compression, it's not as bad as many make out. Writing a good texture memory manager might be tricky, but it's better than having to reduce all our lovely textures... The PS2 also has the most versatile geometry units, with various types of surfaces being very fast and flexible. But it can be a complicated beast to get it to do what you want it to – often with lots of gotchas that can make life hard sometimes."

In terms of sheer processing power, the Xbox easily outclasses its two peers. With a 733MHz Pentium III and NVIDIA's amazingly versatile xGPU (essentially a modified GeForce3 chip), 64MB of unified memory and a 8GB hard drive, Microsoft's console is nothing less than a mini-PC. Two of its most powerful features come courtesy of NVIDIA: pixel and vertex shaders, which were first introduced with GeForce2 cards for the PC.

Vertex shaders enable complex motions to be 'built in' to a character or model, while pixel shaders alter lighting and surface effects on the fly, such as rippling water with true refraction.

CONS

- It's difficult to program, even for experienced coders • Tiny amount of VRAM hampers polygon counts and texture size

KEY COMPANIES

Sony, EA, Eidos, Konami, Namco, Activision, Infogrames, Acclaim, LucasArts

PROJECTED LIFESPAN OF CONSOLE

PlayStation3 expected around 2004 – although PS2 will continue for many years after that.

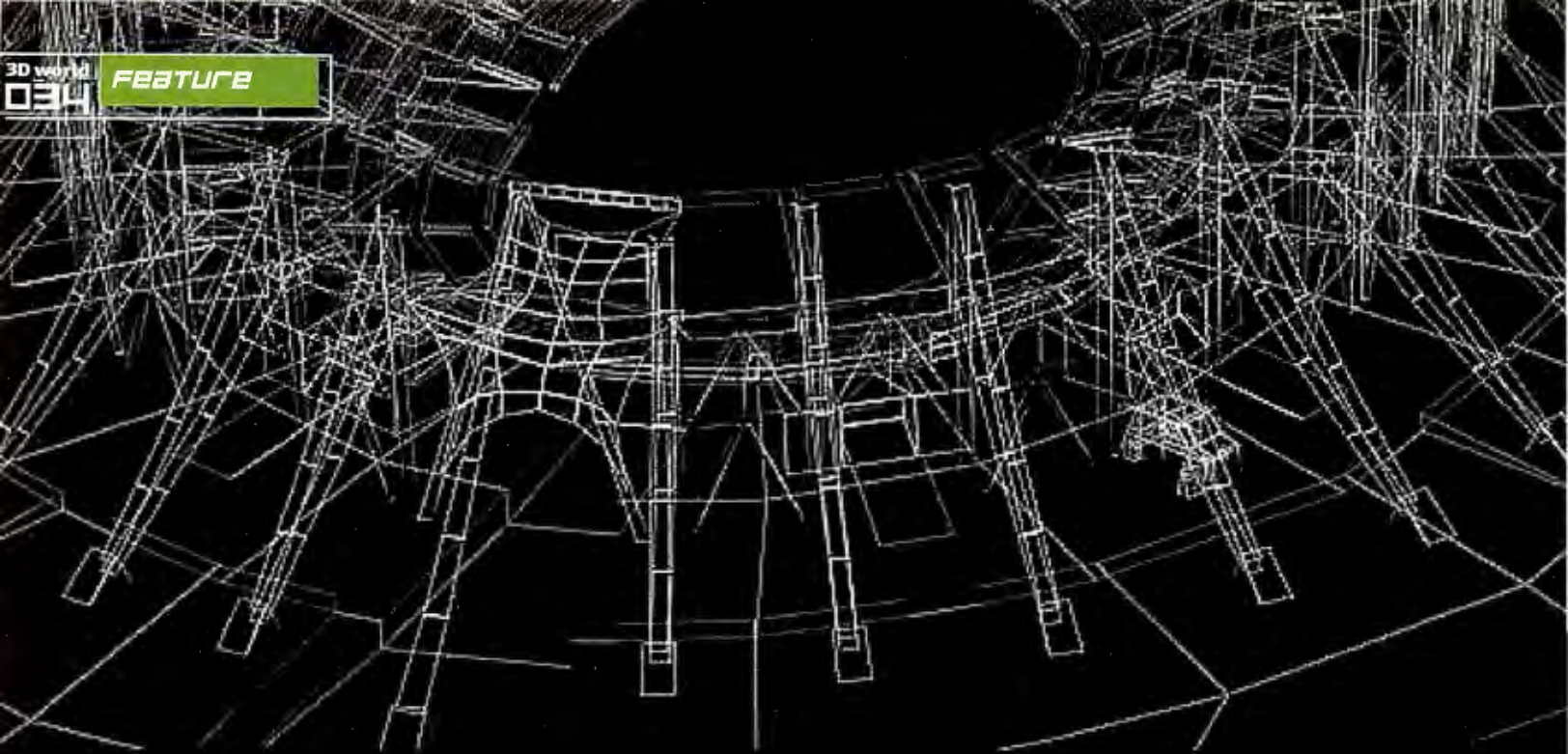
JOB VACANCIES IN THIS MARKET?

Plentiful. The PS2 market is booming despite competition from the other two consoles, and just about every major publisher has titles in development. The PS2 is now just as much as a staple as the PC.

“2 A typical demo for a game job might be to create a building with plenty of detail but with a low poly count, such as a church. Try not to miss anything out – when artists are assessing your work, they'll look at everything!”

1 to 3...

3 Master a particular 3D package – *3ds max* tends to be the most popular among game companies, followed by *LightWave* and *Maya*. A mastery of *Photoshop* is also useful.”



1990s Both technique and technology have moved on considerably since *Elite* – as this in-progress wire-frame model for the virtual stadium in *UEFA Champions League Football* demonstrates.

Best of all from a developer's point of view, they're entirely programmable, a feature unique to the xGPU.

SWEET BUT SHALLOW?

Of course, such flexibility means developers will have to invest considerable time and effort before they can take full advantage of the console's hardware. As Clive makes clear: "Xbox has the best graphics, which means lots of extra artwork – bump maps, specular maps and so on – and coding time: lots of plug-ins for the art packages and writing custom vertex and pixel shaders.

"It's so powerful that it's going to be a while before everyone really gets to grips with it," he adds. "There are less foibles than with the PS2, but its geometry units aren't quite as flexible, which limits – only slightly – what you can do. For instance, there are no hardware subdivision surfaces as there on the PS2."

In many ways the GameCube is the friendliest of the three – an intentional move by the canny folk at Nintendo. "GameCube sits nicely in the middle, has good texture compression and loads of passes – it's very easy to get extremely nice results," agrees Clive. "However, it's less flexible than the other two, which makes it easier to work with, but that might cause problems later on." In

other words, by sacrificing depth for ease-of-use, Nintendo may have shortened the GameCube's lifespan. As the other consoles mature, games are likely to become more graphically spectacular, while the GameCube's relatively modest capabilities will probably be fully exposed within the first year or so of release.

In terms of 3D graphics and potential, then, all three offer exciting prospects. "They can all render so well," explains Clive. "Usually, your art package slows down before the console does! It's more about all the extras you need to support. For PS2, you have to spend more time using textures wisely, but for GameCube and Xbox you end up doing more textures to support all the eye candy and fancy effects.

"Looking back at the old days of developing for the original PlayStation, it's amazing how few polys we had to work with," he continues. "We'd spend many hours trying to reduce the poly counts and textures – now things are much more flexible."

GAME FOR A JOB

All of which means the demand for talented and creative 3D artists and designers among console developers is about to rise sharply. After all, someone has to create all those assets, whether

10 steps to success

4 to 7...

4

Sketches are also an important accompaniment. As in an exam, if you can show your thought processes when developing a piece, rather than just sitting down at a PC and churning it out, the more likely a company is to appreciate your working practices.

”

FACTFILE

MANUFACTURER Microsoft

UK LAUNCH DATE

14 March 2002

TECH SPECS 733MHz Intel Pentium III (modified), 64MB system memory, 32K L1 cache, 128K L2 cache, 2.93 GFLOPS, 2.1 MIPS, 6.4GB/s graphics bus

GRAPHICS SPECS NVIDIA xGPU (modified GeForce3), 250MHz, shares 64MB system memory, 36 million polygons per second (estimated real-world), programmable pixel and vertex shaders, transform and lighting engine

PROS

Modified PC design, therefore fairly standard • Easily the most powerful graphics hardware of all three consoles

Xbox



FEATURE

3D world

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it's the models, the textures, levels or whatever. You only need to check out the Artists Vacancies section on a recruitment site such as Change (see the '10 Steps To Success' box, running along the bottom of the page) to realise the huge demand for 3D artists.

There are no hard and fast rules to getting a job within the industry, which can be both a blessing and a curse. But even for a 'mere' artist, a love and understanding of games is a prerequisite, according to Clive Jones. "Being able to model detailed, photo-realistic and intricate objects is all well and good, but low-to-medium poly modelling is more appealing to a prospective employer who is aware of the restrictions game art can have.

"As technology advances, this isn't as much of an issue as it used to be, but despite what console manufacturers would have you believe, there's still a limit to the number of polys you can have on screen." For character designers, then, polygon modelling skills are clearly an advantage – and the fewer the polys, the better.

A good showreel is essential, too – and good means your very best work, as Monica Crisp from Change points out. "People fail to remember that their portfolio will dictate the quality of the

company they work for, as well as their salary, so it's mindless not to dedicate

time to producing something you're proud of," she says.

"If you're an animator, make sure that your work has some style to it, and is not just a walk-cycle tutorial from a 'Teach Yourself Character Studio' book," adds Clive. "On a similar note for modellers, don't just send in spaceships and robots!"

IT'S NOT WHAT YOU USE...

In terms of packages, both agree that *3ds max* and *Character Studio* (for animators) have established themselves as industry standards. Again, though, this isn't necessarily a universal rule, so if you've spent years mastering a different package, all is not lost.

"Here at Prey, we're dedicated users of NewTek's *LightWave*," Clive says. "For us, the modelling interface is extremely intuitive and the most recent versions of the package have introduced a lot more features that make animation, surfacing and effects quicker and much more effective."

Most smaller developers use cheaper packages such as these, plus their own mix of bespoke tools and editors. Alias|Wavefront's

CONS

• Less specialised than other consoles, so system overheads can be higher, resulting in potential lack of speed

KEY COMPANIES

Microsoft, EA, Eidos, LucasArts, Infogrames, Activision, Interplay, Ubi Soft, Acclaim

PROJECTED LIFESPAN OF CONSOLE

4-5 years

JOB VACANCIES IN THIS MARKET?

Many. Since the Xbox is essentially a mini-PC, it's relatively simple to port games between the two platforms, which often makes it economically viable to release a title for both. Development systems are also obviously PC-based, so if you're familiar with *3ds max* or similar, chances are you'll be able to design for the Xbox.

Make sure you're artistic and creative!

It may sound obvious, but if you can't demonstrate this, you won't get past first post.

Lack of enthusiasm is the main problem, especially when people have climbed half the mountain by getting to interview stage.

There tends to be a lack of relevant artwork in many applications. In the games market, product design is not relevant. If you haven't seen anything like it in a computer game, don't use it. And, in general, graduates' animation is too slow – make it twice as fast and you'll do fine.



2000s The shape of things to come: Pesto's upcoming *Myst III* reveals the integral role the 3D graphics artist now has in game production.

Maya is also starting to make inroads, but usually only with larger developers backed by major publishers, who can afford the relatively pricey per-seat fee and support costs.

Unless you intend working solely as, say, a character modeller, experience with 2D packages is also a benefit. "*Adobe Photoshop*, of course, still remains pretty much the only package for producing 2D artwork," says Clive. Although roles are becoming much more specialised now, because of the sheer complexity of today's titles, it doesn't hurt to show that you can wield a mean pixel for texture-mapping or other purposes, if necessary.

As ever, it's important to remember that all such software is simply a means to an end; your talent is what any games developer really craves. "All of these packages are merely tools," reiterates Clive, "and it is the artist's imagination and creativity that really bring things to life."

Take the experience of Karl Hilton, co-founder and art director of Free Radical Design, for instance. "I just fell into the games market," he says. "I always wanted to do computer graphics, but assumed I'd end up in TV or something, but made the move into video games instead."

A thriving UK company now employing 40 people, Free Radical developed the phenomenally successful *TimeSplitters* for PlayStation2 and is currently working on the sequel. Karl himself has a BA in Architecture and an MA Computer Visualisation and Animation from Bournemouth.

"The biggest reason for rejecting an application is that the person is technically proficient but lacks the design skills and ideas," explains Karl. "We'd rather take a good artist than someone who is good technically. People today can produce flashy looking work that isn't necessarily any good."

...IT'S WHAT YOU DO

Indeed, sometimes it's possible to land a job on the basis of enthusiasm alone. At Bullfrog and latterly Lionhead Studios, design god Peter Molyneux was famous for hiring inexperienced youngsters who went on to become developer superstars. Don't expect this to happen with a major developer working on a major title, though; in such cases, experience counts. "Many companies will be looking to employ people with a proven track

10 steps to success

8 to 10

“9 Ensure your CV contains all relevant details – you'd be surprised how easy it is to leave things out – and make sure it's spell-checked. It's common sense, but counts for a lot.”

“8 Unless stated, specific qualifications generally aren't necessary, but your portfolio must be able to illustrate your abilities and show that they're applicable to the games market.”

GameCube

FACTFILE

MANUFACTURER Nintendo

UK LAUNCH DATE

3 May 2002

TECH SPECS 485MHz IBM PowerPC

Gekko, 16MB system RAM (plus 24MB texture RAM), 64K L1 cache, 256K L2 cache, 1.94GFLOPS, 2.1 MIPS, 2.6GB/s graphics bus

GRAPHICS SPECS ATI/Nintendo

Flipper, 162MHz, 2MB frame buffer, 1MB texture cache, 12 million polygons per second (estimate real-world), transform and lighting engine

PROS

- Dedicated, high-speed texture memory and cache
- Simple yet developer-friendly architecture

record within the industry and often only consider people with one or two published titles already under their belt," says Clive.

"However, other developers *will* consider people from outside the industry and can recognise talent wherever it may come from. Many creative skills are transferable. Somebody with a background in, say, traditional illustration, but with no real experience in 3D work, could get a job as concept artist within a games company and then make the move to the 3D side of things once they have their foot in the door."

"We look for people with really good ideas and a strong visual design sensibility," adds Karl. "They might come from 2D, 3D, architecture, fine art... We don't mind what their background is; it's more important that they have a strong interest in what they want to achieve. At the moment, we have people who are trained animators, transport design students, product designers, and illustrators with a fine art background."

"We really don't give a toss if they've used a PC before," he continues. "In the past we've taken on people that can barely turn on a computer. The software isn't so complex that a

reasonably talented person with the right ideas can't learn it."

As Hilton and Molyneux have proved, the games industry tends to be refreshingly enlightened in this respect, preferring passion and personality over prestige. Clive Jones' advice is equally simple: "Dress smart but casual for the interview and just be yourself. Development teams are usually small, close-knit groups who spend long hours cooped up together, so everybody needs to be a team player. Leave your ego at the door."

ART FOR ART'S SAKE

And leave your dreams of glamour, fame and riches at the door, too. With certain very rare exceptions, game developers experience none of these 'perks' in their day-to-day work. Most people in the industry, 3D artists included, work long and hard simply because they love doing what they do. "Tight deadlines and release schedules mean that you'll often find yourself working late into the night and sometimes even right through the night to get to a milestone on time," says Clive. The question you should be asking yourself, then, is simple: are you committed enough?

Consider that a junior artist might start out on a salary of £13,000 and you may wonder whether it's all worth it. Even massively hyped titles can be pulled at the last minute by the publisher, leaving the development team floundering.

On the other hand, most teams have a relaxed and creative atmosphere, more akin to a group of mates than your typical business. And salaries do rise with experience – for instance, a senior artist can earn £35,000, plus benefits and incentive schemes. As with any career, it's your everyday enjoyment and the flexing of your creative muscles that should be your driving force, rather than thoughts of a new Porsche or your own chat show.

"It is, without doubt, a cool and exciting industry to be in," enthuses Clive. "It's always nice when the product is finally out to see your game on the shelves in computer shops, and know that all the hard work has paid off."

Find out more about Prey Digital Studios and *Stung!* at www.preydigital.com, and Free Radical Design at www.frd.co.uk. The official *TimeSplitters* sites are at www.eidosinteractive.com

FEATURE

3D world

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CONS

- Lowest polygon throughput of the three next-gen consoles
- Nintendo notoriously fussy about all its licensed titles

KEY COMPANIES

Nintendo, Konami, Activision, Capcom, Acclaim, EA, Namco, Ubi Soft, Sega

PROJECTED LIFESPAN OF CONSOLE

3-4 years

JOB VACANCIES IN THIS MARKET?

The GameCube is still very new to this country and it will take a while for developers to warm to it. Nintendo also charges royalties for every title sold on its systems, plus final QA over each one, which can become restrictive. On the other hand, the GameCube is intentionally easier to develop for than the other two consoles, and Nintendo's vast cult-like following guarantees that many developers will be at least porting titles to it.

10

A low-poly model of a human character is

also a showreel essential. It doesn't matter what sort of character it is, but try to keep it below 1,000 polys, and include a reduced version at 250 polys. Build it so that it could actually be used in-game, although there's no need to animate it.



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animusic

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Animusic's showreel can be found on the Web site



Animation driven by music – that's the idea behind the MIDI-led SIGGRAPH sensation, *Pipe Dream*. Animusic's Wayne Lytle, the man with the virtual baton, reveals all...

BY BEN VOST



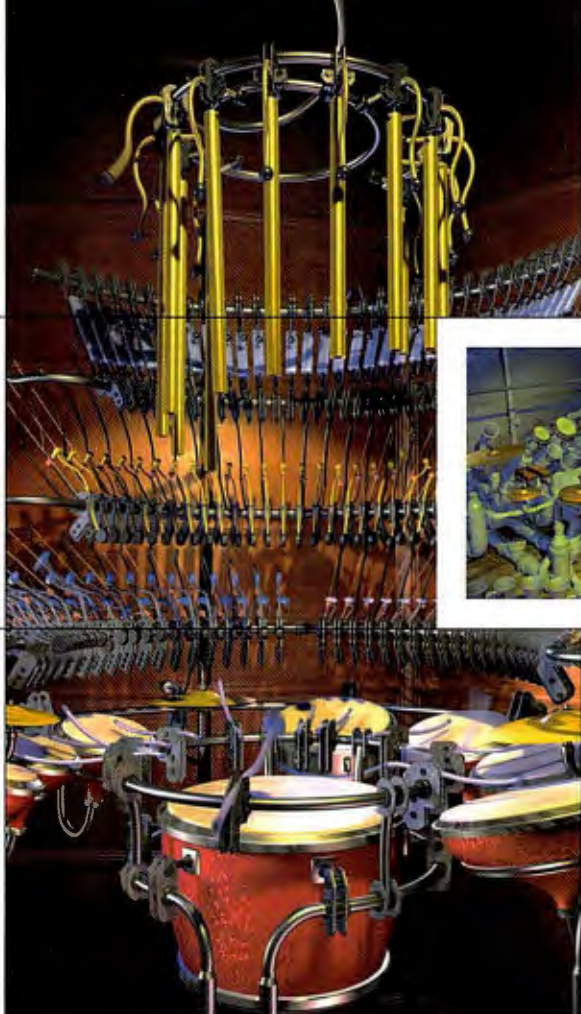
LEFT The stick is based in part on a complex instrument called the Chapman Stick. It looks like a large version of the fretboard on a guitar and is played by tapping the fingers on the strings.

BELOW Originally entitled *Bounce*, *Pipe Dream* is a kind of sequel to 1990's *More Bells And Whistles*, also shown at SIGGRAPH.

The thing that got everyone talking at SIGGRAPH 2001's Electronic Theatre last year wasn't a piece by ILM or Digital Domain, but rather a quirky little animation entitled *Pipe Dream*. The piece, produced by a three-man firm called Animusic, showed an orchestra of virtual instruments 'performing' a complex soundtrack. How did it get made, pundits wondered. Did the music precede the animation? Or had it been carefully composed in post-production, frame by painstaking frame? Some of the more cynical spectators even suspected foul play; a callow stab at publicity. Arguments raged in SIGGRAPH's main exhibition hall over whether it was being procedurally animated or keyframed. People even went so far as to pump Animusic's leading man, Wayne Lytle, for insider information.

"Someone asked us how much of it was rigged," he remembers, "citing a few examples that he figured must have been keyframed, such as the dampers going up and down in





LEFT The first piece completed for the Animusic video album.

ABOVE LEFT Rendering time for the images in *Pipe Dream* was anywhere from five minutes to half an hour per frame for NTSC video resolution.

ABOVE MIDDLE When asked whether the Stick would actually work, Animusic main man Wayne Lytle replies: "Absolutely! If you're not sure, get a friend's bass guitar, turn the amp up to ten and hit a string with a hammer. You'll see."

ABOVE RIGHT *Harmonic Voltage* is the last piece on the album – and also the most abstract. Wayne hopes that by the time you get to it on the album, you're more prepared for its surrealism!

Acoustic Curves, and the Stick bass swaying around while playing, but in fact it's all procedural."

The culmination of three years' intense work, Animusic's *Pipe Dream* is just one of a series of procedural music animations the company has compiled for its latest video album – although Wayne actually made his award-winning SIGGRAPH debut back in 1990 with his first full multi-instrument music short, *More Bells And Whistles*. And in 1991 he was awarded a prestigious accolade by IBM in recognition of this pioneering work.

BEFORE OR AFTER?

Admittedly, it is difficult with Animusic's work to see what comes first – the music or the models – because the answer lies somewhere in between, as Wayne himself explains: "*Aqua Harp* is one example of a piece that was modelled and rigged with music animation algorithms *before* the music was complete," he admits. "But once the music was written and produced, giving us a final MIDI file, we could render the final animation. Up until that point, we'd been doing lots of animation tests using five to ten-second clips, just to verify that the harp and all the other musical parts were functioning properly."

For all his modelling and animation, Wayne uses a single-licence version of *3ds max 3.0*, and then farms the rendering out to ten PCs, ranging from a lowly 450MHz Pentium II to processor-burning 1GHz Pentium III and 1200MHz AMD Athlon giants. Pieces like *Pipe Dream* can actually take up to five months to complete, taking into account all the R&D, modelling and rendering required. Even a cursory look at the instruments reveals Animusic's extraordinary attention to detail.

To enable the animation to relate to the music, Wayne relies on Animusic's proprietary *MIDImotion*, a C++ class program embedded in *3ds max*. "We run the MIDI files through this. It analyses each note, its place and time, which in turn

ANATOMY OF A TRACK

From initial nebulous concept to final render, an Animusic how-to guide...

For the *Video Album*, the Animusic production pipeline went through several stages. MIDI sequencing and digital audio mixing were accomplished using Mark of the Unicorn *Digital Performer 2.7*, running on an Apple G4. Instrument sounds were rendered using around ten different hardware and software synthesizers. *3ds max R3* helped create all the visuals, driven by Animusic's *MIDImotion* software. Post and sweetening were done with *Adobe After Effects*, and custom in-house DVE software used to perfectly re-align animation and music. The DVD was authored with *Apple DVD Studio Pro*. (Although the workflow outlined below is correct, in practice there was much looping back to previous steps, including Step 1, to modify the music.)

1 Wayne plays out his piece via *Digital Performer* using a hooked-up synth keyboard and editing the MIDI data. The music is rendered to digital audio and mixed to a stereo wave file in *DP*.

2 Initial tests begin with one single note element of a virtual instrument. The focus at this stage is to ensure that the one note behaves in a realistic and pleasing way. Many real-time OpenGL tests and fully rendered *3ds max* tests are performed, usually with just one note played a few times.

3 The entire note range for the virtual instrument is then tested in a similar manner. There must be at least one element for each note number played. This set-up is tested on a full musical phrase, using most (or all) note elements.

4 Lighting and cameras are added, and many renders performed over the entire musical piece. The initial camera set-ups help to understand what is happening where, and what interesting events should be focused upon. From here, cameras are positioned to capture the automated performances from the best possible angles.

5 Now the frames are lined up exactly with the music. To avoid the hunting for which frames went with which phrases via trial-and-error, custom in-house DVE software is used to guarantee that each frame is exactly aligned with the music track.

FACTFILE

FORMED
1995 (as Visual Music)

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CREDITS *More Bells And Whistles* (1990) (Lytle) *Beyond The Walls/Concerto In 3D* (1995); *Starship Troopers* (1997); *What Dreams May Come* (1998); *The Matrix* (1999); *Pipe Dream* (2001); *Video Album* (2001)

THE PERILS OF DVD

ONE OF THE BIG STUMBLING BLOCKS for the Animusic album was that many of the pieces were difficult to encode using MPEG2 – the algorithm required for DVD output – because of the visuals' extremely fine lines and incredible attention to detail. In fact, a number of DVD production houses approached by Animusic turned the job down!

RIGHT This animation was tailored to one of the album's oldest pieces of music. It was produced using a synth now no longer available – and had to be remixed.



determines how each instrument should move in order to play the music." And the fact that *MIDImotion* was developed using *max*'s SDK rather than as a MaxScript has far-reaching implications for animation, which Animusic is eager to explore further. Soon, for instance, it may be possible for users to build their own virtual instruments, effectively paving the way for an *Animusic Construction Kit*.

MIDI MADNESS

But it's MIDI which enables Animusic to realise its animations so effectively. MIDI, Musical Instrument Digital Interface, is a long-established communications protocol which enables a synthesizer to talk to another synth or computer. It provides all

the necessary information about each note that's played, including its timing, pitch, duration and other parameters. Without it, Animusic wouldn't be wowing the crowds – "Believe me, if we did a lot of keyframing, we'd still be animating the stuff!" says Wayne.

To help create the sonics for its kinetic animations, Animusic relies on a diverse mixture of software and hardware, including Mark of the Unicorn's *Digital Performer*, a heady collection of hardware synths from Roland, Emu, Kurzweil and Nord, and a software synth called *Reason*.

And although Wayne runs the show, he relies heavily on colleague David Crognale, whose expertise with *3ds max* is second to none. A typical piece – such as the dulcimers in *Acoustic Curves*, for instance – begins with Wayne outlining to David his overall vision, along with several parameters for the instruments. At this point, Lytle has already produced the music – or at least knows what synthesizer sounds he wants to use. He also knows roughly what the graphical versions of the instruments will look like.

David then produces sketches and themes based on Wayne's ideas. After a few iterations, where ideas are bounced around to see what can be improved, they have some general plans for what they want to build in 3D, and David produces a model in *3ds max* that can be rigged with the music animation software. They then test it by throwing individual notes at the instrument to see how it reacts. After a few experiments, David details the instruments to the level required – and creates an appropriate stage setting. At this point, the lighting is designed, with much debate between the two creatives about warmth, continuity and colour, all of which have a significant bearing on the ambience of the piece. Lastly, appropriate camera motions are added to help tighten the connection between the music and the instruments.

The source of Wayne's preoccupation with music is easy to pinpoint. He studied classical piano and organ through college – and played keyboards in prog rock bands: "One of the most influential musical experiences for me was playing keyboards in an instrumental rock trio," he says. This might explain why, when asked whose music he'd most like to animate, Wayne instantly replies: "Rick Wakeman".

THAT DIFFICULT FIRST ALBUM

Animusic's *Video Album* – an eye-catching demonstration of *MIDImotion* in motion...

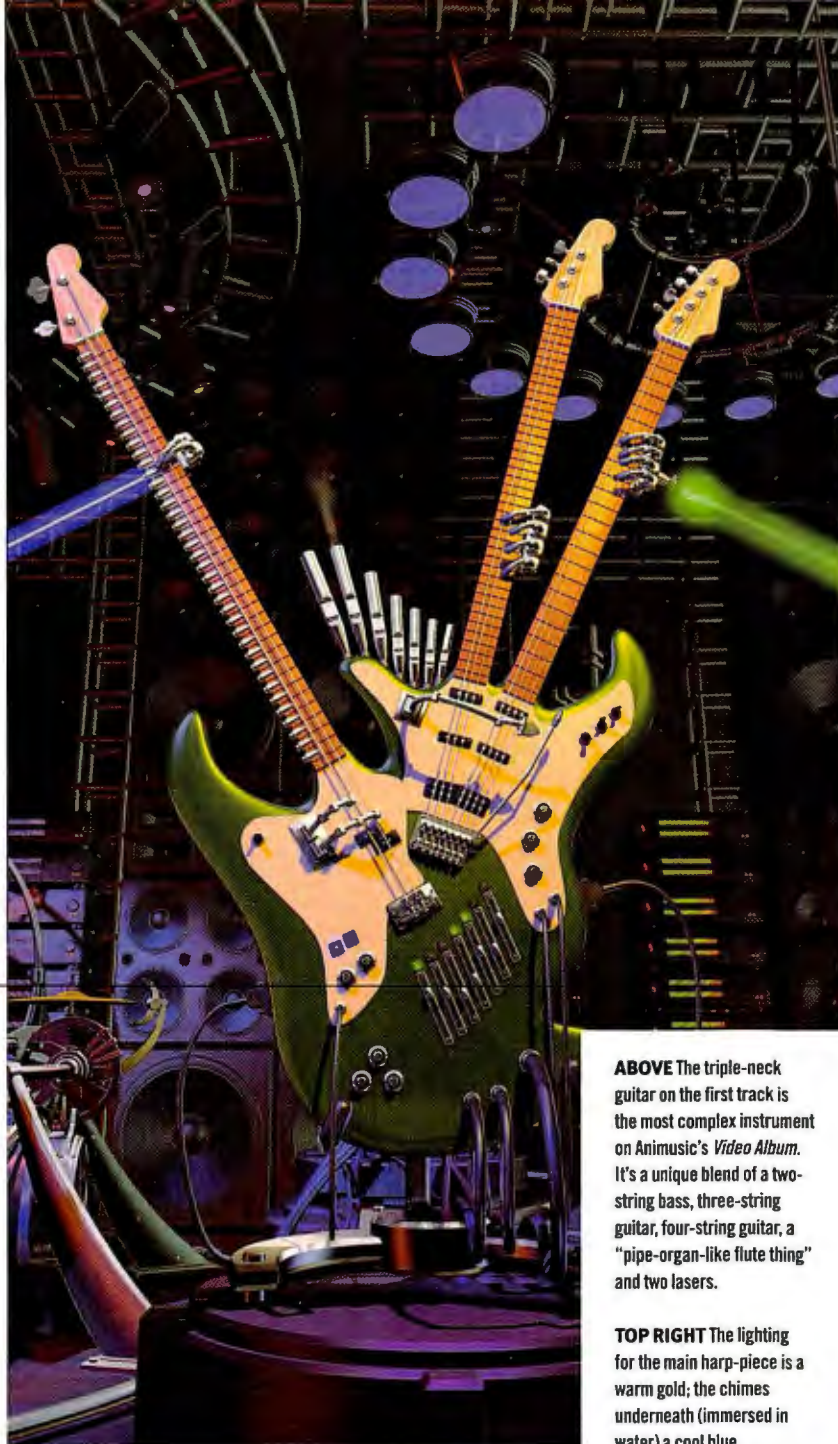
Animusic's album boasts seven tracks (*Future Retro*, *Stick Figures*, *Aqua Harp*, *Drum Machine*, *Pipe Dream*, *Acoustic Curves* and *Harmonic Voltage*) and runs for a total of 33 minutes. Wayne also provides an interesting, if less-than-technical, commentary for the duration, which effectively doubles the album content. Also included are over 250 production stills and various solo cams – which focus on a single instrument's performance. It was a feature many asked for: "It can get confusing when there are numerous instruments playing and you sometimes want to see just the ones you're interested in throughout the whole track," explains Wayne.



1 *Future Retro* – this track easily boasts the album's most complicated instruments.



2 *Stick Figures* – the hypnotic swaying of the double-bass figure is purely procedurally based. No keyframing here (despite what you may have heard)!



ABOVE The triple-neck guitar on the first track is the most complex instrument on Animusic's *Video Album*. It's a unique blend of a two-string bass, three-string guitar, four-string guitar, a "pipe-organ-like flute thing" and two lasers.

TOP RIGHT The lighting for the main harp-piece is a warm gold; the chimes underneath (immersed in water) a cool blue.

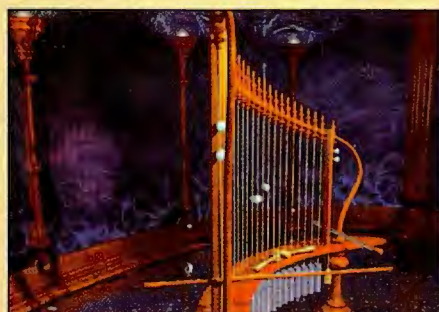


"IF WE DID A LOT OF KEYFRAMING, BELIEVE ME, WE'D STILL BE ANIMATING THE STUFF!"

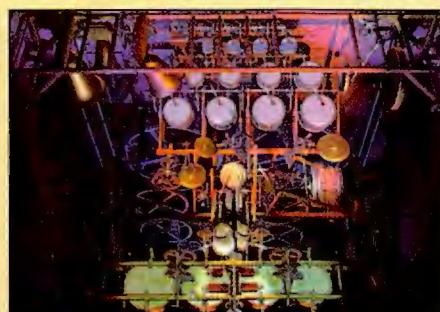
And, despite their virtual mantelpiece already groaning under the weight of awards lavished on their previous work, the Animusic team are not resting in their easy chairs just yet. "We're interested in large format speciality venues," says Wayne. "The ultimate would be to have the audience completely surrounded with stereoscopic projection and multi-channel surround, including overhead." Which sounds suspiciously like another Electronic Theatre project in the making: future SIGGRAPH visitors, prepare to be stunned all over again...



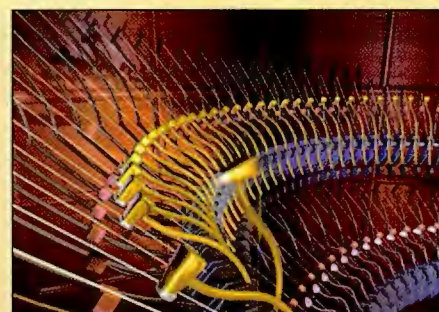
Animusic's *Video Album* DVD (Region 0) is available direct from the Animusic Web site at www.animusic.com/online-store.html, and costs \$19.95. An NTSC video version is also available for \$14.95.



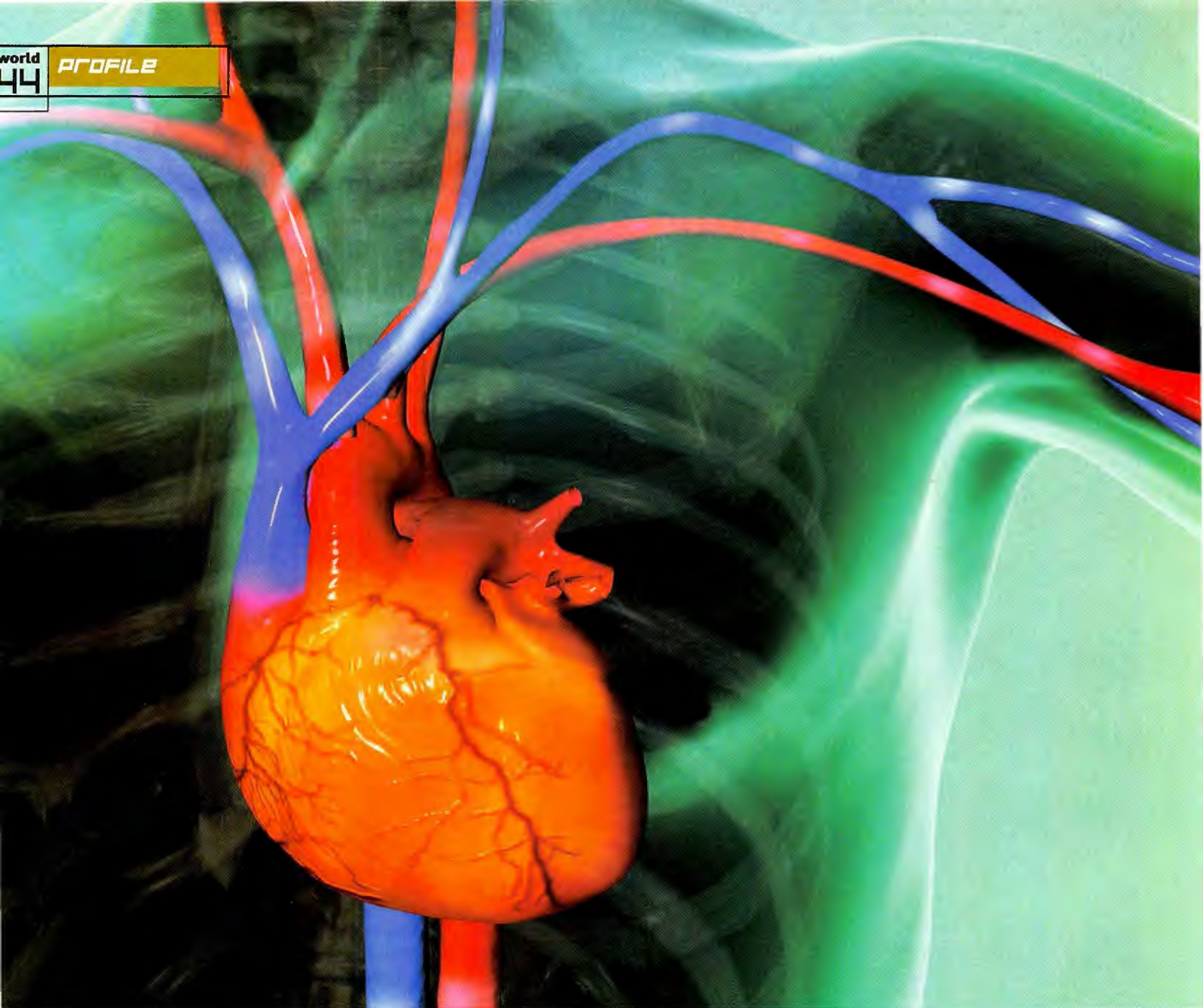
3 *Aqua Harp*—this mellow piece features just the 'one' instrument, but that comprises two stringed devices, a pipe organ and chimes.



4 *Drum Machine*—this Heath Robinson-like contraption is Animusic's drum machine. It rises majestically from the floor of some giant cathedral of dance. [Steady on—Ed.]



5 *Acoustic Curves*—easily the most ethereal piece of music on the entire album, this track has nested sets of dulcimers playing a pleasingly hypnotic melody.



JESSE FLORES

king of hearts

ABOVE A still taken from a medical animation to show how a new heart disease treatments open up coronary arteries. Created using *Electric Image* and *After Effects*.

LEFT This character was developed for recruitment company *Monster.com*, and is based on its existing 2D logo figure and brand guidelines.



If there's one animator who knows how to play with the heartstrings, it's Boston's Jesse Flores. *3D World* talked to him about Macs, monsters – and medical animation **BY VICKI PEARSON**



"FOR EVERY HOUR OF PAID WORK, I SPEND TWO OR THREE KEEPING UP WITH NEW SOFTWARE"

LEFT These architectural towers were created for a proposed entertainment complex in Taiwan. Jesse supplied several images from different angles, as well as animation studies for a presentation. Four towers in all were modelled in *form.Z*, and then rendered in *Electric Image*.

LEFT BELOW Mykrolis tells the story of a clean room technician who reconstructs the old company logo into a new logo name. It was intended to announce the formation of the new company Mykrolis and was used at a US tradeshow and on the company's website.

proposed architectural sites with sculptures and signage in place," he explains. "It was fancy stuff for the boss to show off to the client."

Four years ago, he set up a home studio – which now boasts four Macs and a healthy batch of software tools – and began working with architects, engineers, advertisers, video producers and multimedia designers. "They're all looking for something different and speak a different language," explains the designer. "Medical animation has an entirely different ethic than a flying logo with bells and whistles. I think you have to pick up fairly quickly what they're looking for and what's important to them."

He clearly enjoys the diversity of his work, finding himself equally comfortable animating a slobbering monster as sculpting a diagram to demonstrate the treatment of heart disease. "For a while, I considered focusing on a particular area, such as characters or mechanical. But working to such extremes has its benefits. It's easy to enthuse about a project because I don't do that type all the time."

TELLING A STORY

Whatever the commission, Jesse always approaches each project with the same mindset: "A producer client told me some time ago that a project has to tell a story. That's stuck in my mind and I use it as a measuring stick. It's a great challenge to try and grab someone's attention for a brief period of time and for them to feel that it was worthwhile." It's this attitude which also dictates the type of work Jesse takes up. "The design choices that I've made are based on what I, as a viewer, would find attractive and interesting."

Recent projects include a series of animations entitled *Journey to the Centre of the Internet*. He was given free reign to animate 48 scenes, so he chose a simple style using character clips from *Poser*, combined with animated shapes and patterns. "It was great creative fun and I'd like to continue in this direction. I think it's inspiring to see 3D work done in a non-photorealistic manner." Next up is some character development work for a cartoon pilot. "I'd like to develop the cartoon figures in 3D and compose them in *After Effects* using their new 3D composition feature," he enthuses.

Curious Labs' *Poser* and *Adobe After Effects* are just two of the tools that Jesse uses to create his distinct effects.

"For every one hour of paid work, I probably spend two or three hours keeping up with new software. I've recently been diving into *Painter 7*, *Electric Image Universe 4* and a bunch of plug-ins and sound applications." Add to these *Photoshop*, *Electric Image Modeler*, *form.Z*, *Amorphium* and *Organica* and you can see Jesse has a powerful set of tools at his fingertips. "Most of these programs don't cost a small fortune yet have great capabilities," he continues. "There are a number of outstanding programs made by obscure companies that you've never heard of, yet many of them can do wildly imaginative things." So experimentation is the secret to success? "Everyone works differently so to find a collection of tools that suits your own methods in the key."

FACTFILE

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FORMED 1998

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CONTACT
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CREDITS Mullen Advertising,
Syngress Publishing, Mykrolis,
Pridgeon Design

Jesse Flores' enthusiasm for 3D graphics borders on the evangelical. With leading US ad agency Mullen and Syngress Publishing knocking on his door, the freelance animator just can't get enough of the stunning effects and visualisation 3D makes possible. "It's a compelling and attractive tool for telling a story," says Jesse, whose diverse creations can be seen on the Web, television and in corporate and medical projects. "It's possible to convincingly simulate colours, lighting, effects and motion that are difficult or impossible in reality to produce..."

But its 3D's ability to create its own virtual space that really inspires Jesse. "I think viewers are captivated by it," he says. "You're taking them for an amusing ride. Whether it's a flying logo, architectural environment or character scene, the software enables you to create this implied space which unfolds in front of the viewer."

It was architecture that first drew Jesse towards a career in 3D design; while working for a design agency that specialised in installations, signage and public sculptures, the art graduate soon found his way into modelling and rendering. "I was introduced to *Strata Studio Pro* and made models of the





simon browne

Genius of ingenuity



Showreel on
cover CD

It's easy for a large team to create great 3D work. But for former physicist, industrial designer – and now one-man corporate 3D powerhouse – Simon Browne, it takes a little more imagination...

BY JIM THACKER

ABOVE A shot from a video created to show the on and off-road features of the new Range Rover flagship. The model was created in *max* and *Maya* from the original CAD data.

TOP MIDDLE An 'inside' view of a human nose, created in *max* and rendered using *mental ray*. Originally created for a kids' video about asthma.

TOP RIGHT An attempt at ultimate photorealism using *mental ray*. Modelled in *max*.

BOTTOM RIGHT Originally created for the Roger Sanchez CD *First Contact*, the nail array model serves as a good basis for experimenting with depth-of-field features.

Genius, Thomas Edison once remarked, is one per cent inspiration, and 99 per cent perspiration. He was talking about invention, of course. For 3D animators, the formula might run '99 per cent perspiration, a nice render farm and some complicated in-house software.' But that's genius for you; it always comes expensive. The merely ingenious, on the other hand, can survive on a much lower budget.

"I'm not going to kid myself that my work is the best available," says 37-year-old corporate artist Simon Browne. "Most of the time, I do a project on my own, so there's no way it's going to compete with a big company's output. But unfortunately, there aren't any awards for 'Best corporate graphic under ten grand'. I'd describe my work as 'Bloody good for the money'."

And Simon's work is bloody good. Consider the Roger Sanchez CD *First Contact*. The record company, in its infinite wisdom, had decided that it wanted the artwork to contain a pin array: one of those strange executive toys into which music industry moguls – and fans of recreational drugs – stick their hands to make patterns: in this case, Sanchez' logo. Only one

slight problem: they're a bugger to model. "Straight displacement mapping doesn't work, because it distorts the heads of the pins," Simon explains. "The first company they approached just couldn't do it, so I undertook to make the model for them. Very high polygon counts, and tricky to light. And music people change their minds. A lot."

A LIFE IN TECHNOLOGY

Not unlike Simon himself. A child of the 1980s, his first contacts with 3D were *Tron* and Rushes' ground-breaking all-CG video for Dire Straits' *Money for Nothing*. He was 17, and it was to take him a further 12 years to break into the industry.

"After an unsuccessful career in the printing inks industry, I got a job using *AutoCAD*, drawing Rover garages for local councils. The company I was working for had good links with Autodesk, so one day a copy of *3D Studio VIZ* plopped into the department. As soon as I saw it, I knew that that I wanted to use it."

And use it he did. Over the years, *3D Studio VIZ* metamorphosed into *Autodesk VIZ 4*, and Simon migrated to a more dedicated animation package, but he has remained loyal to the Discreet/Autodesk family of products. Occasional dalliances



with *LightWave* and *Maya* aside, his main workhorse is still *3ds max*, with one seat of *mental ray* for rendering. Adobe *Photoshop* and *Premiere* complete the line-up.

For hardware, Simon uses four twin-processor Intel boxes with high-end games cards and as much RAM as the slots will take, a good-quality video camera – used mainly for animation timings – and an ADSL connection. The camera aside, it's a modest set-up, and one that many enthusiastic non-animators would rival.

"My secret isn't the kit I use; it's knowing its intricacies very well," he explains. "I know exactly where the bugs are in *3ds max* and what plug-ins save me time. I also know how to get the best out of the rendering and the materials editor."

THE CONTENTED RECLUSE

In an ideal world, Simon's next project would be another music video. One with a six-figure budget, featuring a well-respected contemporary act, and with a small team of extremely capable artists to do all the donkey work. However, because this is not an ideal world, his latest project is actually a Range Rover ad. Not that he seems too distressed about it:

"It's a prestigious brand, and I was given a great deal of creative freedom. The rest of the video was of a very high standard, so it was great to be involved."

In fact, although – when pushed – Simon will cite the work of graphic artists like MC Escher and golden-era animators like Tex Avery as inspiration, in truth, he's content to continue in the corporate field: applying the intricacies of intimate knowledge, the genius of necessity. Ambitions? Well, just the one.

"In ten years' time, I'd like to be doing essentially the same thing as I'm doing now," he remarks. "Just doing it from the Bahamas via Holo-ADSL!"



FACTFILE

NAME Simon Browne

AGE 37

BASED UK

GRADUATED 1982
(BSc Physics with Laser Technology)

WEB None

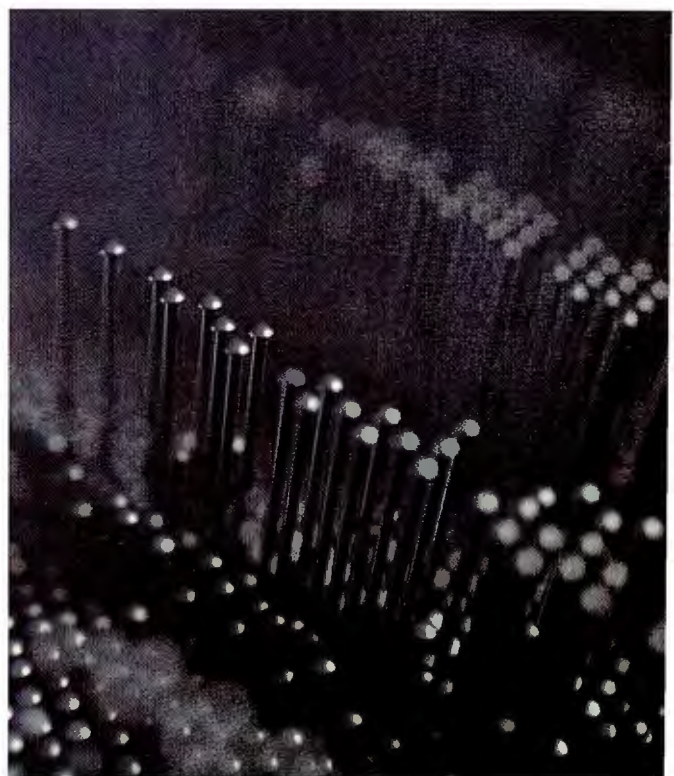
CONTACT +44 20 8855 6552
simonb@videopost.freemove.co.uk

CREDITS Range Rover, Roger Sanchez, Shell, The Sultan of Brunei, Ozric Tentacles, Anglian Water, Sky TV, Hoover, Adidas, BT, Sony

PRODUCTS USED

Maya 4, *3ds max 4* with *mental ray*, *Photoshop*, *Premiere*, *Mixman Studio Pro*

"MY SECRET ISN'T THE KIT I USE; IT'S KNOWING ITS INTRICACIES VERY WELL... I KNOW WHAT PLUG-INS SAVE ME TIME"





3D COMPOSITING

See how the professionals do it with our breakdown of the multiple layers used in the animated feature *Krug*

BY BILL FLEMING

As our benchmarks for the detail of 3D animated productions become ever more demanding, we need to find practical and timely solutions for creating heavily detailed, realistic 3D realms. This means we need to detach ourselves from the '3D world' concept, where traditionally the impulse was to create a complete 3D environment for our productions. While that's certainly a good idea, it's nearly impossible in terms of time and finance. To maximise efficiency, we need to develop worlds on layers, using composited elements wherever possible.

Compositing is a staple in live action films. For many decades, mattes have been used to expand worlds, simply by compositing 2D illustrated elements into a live-action sequence. Only recently has this trend caught-on in the 3D community. But while the 3D programs of today have numerous powerful features, they're still

hindered by lack of computing power. The idea of creating a complete world with millions of polygons and gigabytes of textures with unimaginable effects just isn't feasible. Shots like this bring a production to its knees. This is where compositing can help. If we create the complex shot in layers, and composite them in post-production, we save an enormous amount of time. To illustrate this, let's take a closer look at how a complex scene for the animated film *Krug* was created using multiple layers...



Bill Fleming is the president of Komodo Studio, a leading effects outfit which specialises in photorealistic 3D creatures and characters for broadcast and film. Bill is the author of a dozen best-selling 3D books, including *The 3D Creature Workshop*, published by Charles River Media, Inc., and *The 3D Photorealism Toolkit*, published by John Wiley & Sons. You can contact Bill directly via email – bill@komodostudio.com or visit his Website at www.komodostudio.com



Images for this tutorial can be found on the Website,
and the combustion 2 demo can be found on the CD.



STEP ONE building a new world

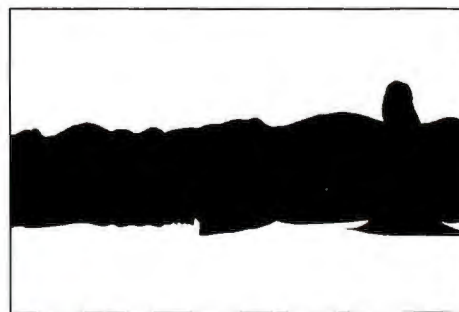
First, your creatures need a landscape to roam about in...



1 The *Krug* environment is composed of more than 15 layers of data. This seems a lot, but actually makes the scene more flexible. At any time we can radically alter, say, the lighting, by rejigging a few parameters rather than rebuilding the entire scene. First step: to create the background mountains.



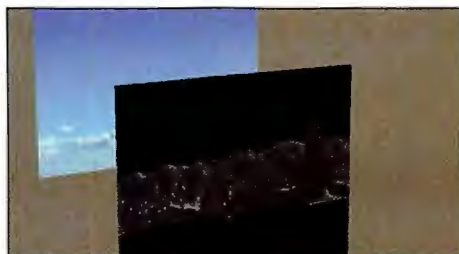
2 Once they're built, we render out the mountains with an alpha channel so we can crop the background. This is basically a 32-bit TGA file. There's no need to create a full 3D mountain environment, because they're in the background and the camera doesn't rotate in this particular shot.



3 Here's the alpha channel of the mountain TGA image. Anything in white is clipped when the image is loaded into the compositing program. For this, we tend to use a post-production tool, such as *combustion 2*, or any 3D program. *combustion* has better tools for compositing, though.



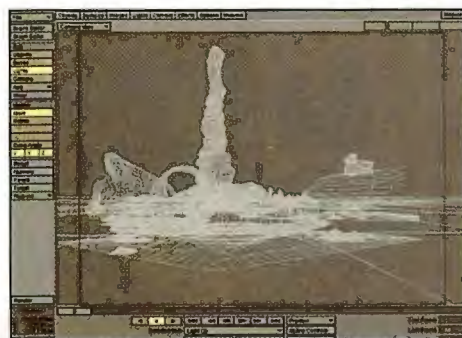
4 Before developing the layered file, we need to create the sky using another image file. This could be a rotoscoped cloud sequence for movement, whether live video or rendered clouds, or a simple image that's much wider than the shot, so we can move the cloud plane to simulate movement. Both methods are equally effective.



5 Now the mountain and cloud textures are loaded into the compositing program and applied to simple planes, with the clouds behind the mountains. The mountain image is a 32-bit TGA file, so the alpha channel is activated to clip the black background. In some cases, we may need to load a separate alpha map to clip the mountains. It all depends on the type of compositing program you're using.



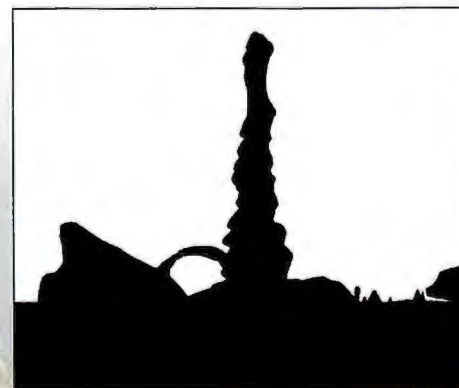
6 Here we can see the mountains with the alpha map applied, revealing the cloud plane behind it. It doesn't look like much yet, but is soon will. To complete the scene basics, we need to create the foreground terrain layer.



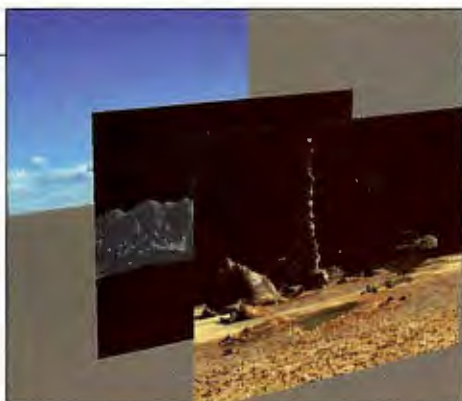
7 We create this rocky terrain using any typical 3D program, leaving the skyline blank and rendering the file as a 32-bit TGA or TIFF file to capture the alpha channel (to clip the background when composited).



8 And this is the result: a moody, rendered terrain that's clamouring for some dinosaur action.



9 Here's the alpha channel for the terrain file — this will clip the black background during compositing.



20 In the compositing program, a new plane is added in front of the mountains and the terrain texture applied to it.



21 Once the alpha channel is activated, the black background is clipped to reveal the mountains behind the terrain. A test render is now created, which takes mere seconds because the elements are simply 2D images.



22 Here's a rendered test of the three composited layers. Looks great, doesn't it? Best of all, you can't tell that the image has been created using three flat images. Now we need to add more detail to the scene, all of which we'll apply on composited layers.



23 The plant life is rendered separately, but as part of the terrain scene file. What this means is the plant life is staged with the terrain, but the terrain knocked out of the final render so only the plants and their shadows remain. This is referred to as a shadow alpha render and is common technique of 3D compositing.



24 Here we see the shadow alpha channel that will clip everything but the plants and their shadows. The plants are created on a new layer, so we can animate objects behind them. If they were part of the terrain render, it would be impossible for a creature to move *behind* the plants...



25 The plants are now applied as a new plane in the compositing program, with the alpha channel activated to clip the background. A render is used to test the effect. These are faster than doing an actual 3D scene because no geometry is being rendered, just the composites of 2D images.



26 The next step is to add some particle effects for the dust blowing off the boulders in the background. We could have added this in a 3D render but 2D particles render in real-time and are far more efficient than 3D particles -- and you can't tell the difference.



27 Particle emitters are placed in front of the terrain layer and directed to the left. Because the particle layer is behind the plant layer, we get the effect of true z-depth. Now the dust is behind the plants and any other layer we add above the particle dust layer.



28 Here we see the rendered particle dust blowing off the boulders. This test rendered in a mere five seconds, which is about 100 times faster than 3D particles, and the effect is extremely realistic. Now to add some creature life to our composite...

STEP TWO adding life elements



19 For a more realistic effect, the dinosaurs are animated on a flat plane that matches the terrain, so the shadows are captured in the render. The point of rendering the creatures on a layer is to speed up the rendering and provide flexibility. To change the position of the dinosaur is simply a matter of moving it in the compositing program. No extra work is required, because the dinosaur frames are already rendered.



20 The dinosaur animation is now rotoscoped on a plane behind the plant plane in the compositing program, and the alpha channel activated to clip the background. Voila! The dinosaur blends seamlessly with its environment and moves behind the plants, creating a realistic z-depth.



21 Time to add a couple more dinosaurs using the same technique. In fact, each new dinosaur is on a separate layer, so it's easy to make every animation look unique by offsetting their position and start frames. With this technique, you can use one rotoscoped dinosaur animation to create a herd of dinos that all look different.



22 Here we've added several more dinosaurs on separate composite layers. Since the dinosaurs are being composited, it's simple to move them around the scene to find the best position, without having to waste time rendering the 3D scene again. You can preview the rotoscoped-animated dinosaurs in real-time in the composite program.



23 Now the final creature layer is added above the plant layer. This sequence includes Gullum the Goblin being chased by a Pterosaur. The grass tussock in the lower left needs to be in front of Gullum, but it's easy to move it to a new layer above him.



24 Gullum is running hard through a dry desert floor, so he should be kicking up the crust. To create this effect, we stamp a divot sprite over the terrain layer and key it to the particular frame where it becomes visible.



25 Next, a 2D sprite of a ground chip is added on a new layer and animated using Splines, so it pops off the ground when Gullum runs by. This layer is added behind the Gullum layer, so the chip flies out under his foot.



26 Of course, this action will leave dust around the chip, so a simple dust colour is added by painting the detail on a new layer that's keyed to reveal the dust after the chip flies up. Speaking of dust, Gullum would be kicking up plenty when he runs through, so we need to add particle emitters to help create a suitably murky debris cloud.



27 Two particle emitters are added on layers, one layer in front of Gullum and the other behind for the rear leg. The particle emitters are keyed to Splines that follow the path of Gullum's movement and are given a death rate so they fade out as Gullum runs off.



28 Here we see the final composited animation. And because the elements and effects occur on layers, it's much easier to edit the scene in real-time to rearrange its contents. In fact, we can completely change the scene in just a few steps. With little effort, for example, we convert it from a sunny day to a stormy evening.



31 First, we apply a colour modifier to the layers of the composite image. Basically a brown is sampled from the storm clouds and applied to each layer with a colour blend filter. This blends the layers with the sky layer for a more natural look. Of course, the setting is still too bright for an afternoon storm.



34 Now we add a lightning bolt to a new layer behind the terrain, so it appears in the distance. The bolt is a simple animated sequence rotoscoped to a plane, with an alpha channel to clip the background and a simple glow effect applied to make it appear more 'electric'.



29 First, a storm cloud sequence is rendered out using your 3D app, or a video sequence selected.



32 To darken the scene, we need to lower the ambient light in the composite. It's that simple. Now the setting is more gloomy and ideal for a desert storm... A few 'storm' elements would complete the picture, though.



35 The rain is added with an area particle emitter on a new layer above all the other layers. Applying a motion blur makes the particles look more realistic.



30 Now the storm cloud sequence is rotoscoped to the sky plane in the compositing program. This looks great, but the lighting of the image doesn't match. The mountains in the background are blue and the foreground is too hot. Fortunately, this is easy to change.



33 First, to add lightning strikes – again this is very simple. Create the lighting effect by adding a spotlight that targets a particular region of the layers where the lighting bolt strikes. The spotlight is added to affect several of the layers, but not all of them, to create the illusion of depth.



36 Finally, a spotlight is targeted at the sky plane, at the origin of the lightning bolt, to create a hot spot. This completes the storm transition of the desert setting. As you can see, the change is dramatic but it only takes a few minutes because all the elements are on layers. Creating the same transition in 3D would've taken many hours.



Three professional-quality DAZ2D (www.daz2d.com) Poser models and all the images for this tutorial can be found on the cover disc

Movie secret agents are the biggest posers of the silver screen. Who else would don a tuxedo to dodge missiles in a jet-pack? This month we pay homage to these suave superspies and create an atmospheric, action-packed spy scene – courtesy of Poser, of course!

BY GEORGE CAIRNS

POSED TO LIEPERSED





This tutorial uses the Michael 2.0 *Poser* model

from DAZ3D (www.daz3d.com), although you can also follow it using the default *Poser* figure if you prefer. If you do opt to use Michael 2.0, install him using the Easy Install option – and ensure your *Poser* folder is called PoserTM or Poser TM4, so that the installer can put the relevant texture and model files in the correct place.

Once installed, you're ready to turn 'Michael' (or your *Poser* alternative) into a globe-saving superspy, decked out in a rather fetching tuxedo-jet-pack combo (all the rage at MI5, apparently). Pay attention now, 007...

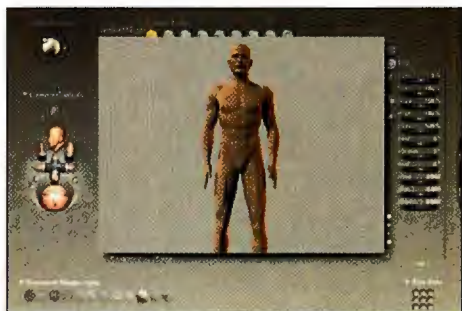


George Cairns teaches students the joys of *Maya* by day; by night his alter-ego produces sci-fi artwork for CCGs.



STEP ONE customising clothing

Our secret agent just wouldn't be the same without his steam-cleaned tux...



1 In the Figures palette, go to Daz people and click on the Michael 2.0 P4 Nude Man. Click the Change Figure icon. Now do a test render and you'll see that Michael's been working out big time. He looks as if he can kick sand in the face of the default *Poser* character.



2 Go to Figures > Clothing-Male. *Poser* kindly supplies a ready-to-wear tuxedo for our currently naked secret agent. Select the Tuxedo and click Create New Figure (the double-tick icon). The tuxedo should appear in the scene, as shown.



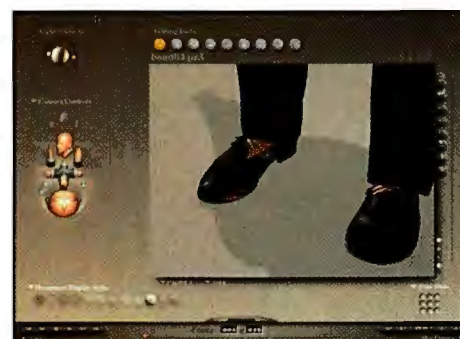
3 There are now two figures to play with – Figure 1 (the man) and Figure 2 (the tuxedo). Each figure has its own sub-menu of movable parts. At this stage, if you move the man the clothes stay in the same spot, which isn't much good when he's flattening villains. Although it would be kinky...



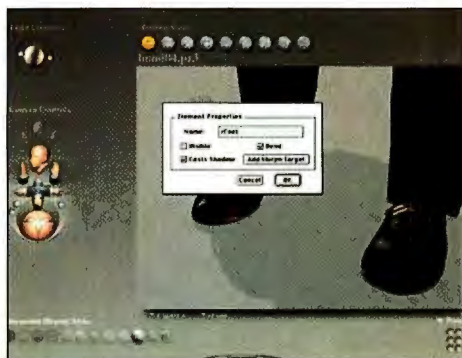
4 Let's get the clothes moving with the man. Select Figure 2 from the Current Figure menu. In the top menu bar, select Figure > Conform To. In the pop-up menu, make the tuxedo conform to Figure 1.



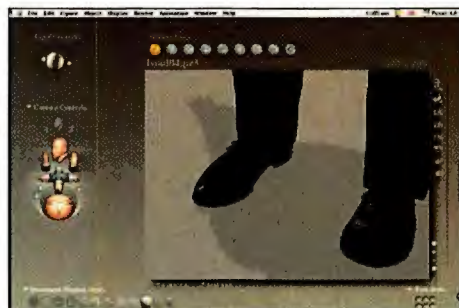
5 Test the result of the Conform by selecting Figure 1's components and moving them. (Make sure you select Figure 1 before you move anything or the clothes will move independently.) Result? The tuxedo now moves with the man.



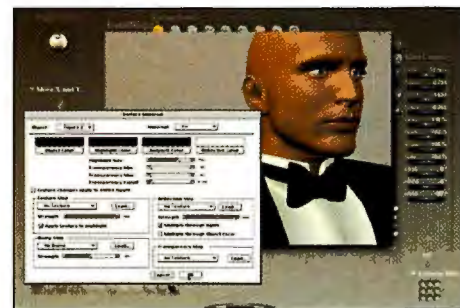
6 Continue to test the movement of your man and you'll notice that in certain positions you'll see unwanted bits of Figure 1's geometry poking through the clothes. Here you can see his feet showing through his shoes, for example.



7 To get rid of the unwanted Figure 1 geometry, go to its sub-menu and select rFoot. Now open the top menu bar and select Object > Properties. Make the right foot invisible.



8 Use the same technique to hide the right toes, then repeat the process for the left foot. Move the arms and torso to check that other parts of the body don't show through the clothes either. Once you're satisfied, restore the figure to its default position via Edit > Restore Figure.

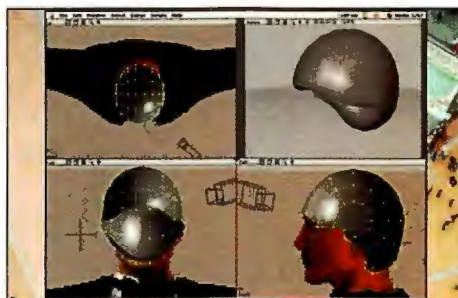


9 Now it's time to colour that bow-tie a more appropriate black. Go to Render > Materials in the top menu. This opens the Surface Material window. Select Figure 2 from the object menu. Open the material menu and select the tie. Change the Object colour to black and the Highlight colour to a dark grey.

STEP TWO building props Spies need toys – so open the toolbox!



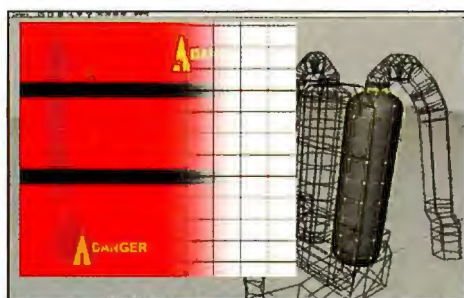
20 Go to Camera Controls. Select From Right Camera. Position the figure to fill the screen. Select Render > Render. Do the same for the Front and Top views. You can now use these snapshots for reference in another 3D application – and build props to customise your *Poser* Figure.



21 Import the reference images into your preferred 3D modelling application. Make a helmet by creating a partially formed sphere. Scale and align it with the imported *Poser* reference images, as shown. Move the CVs around to make a more appropriate helmet-like shape.



22 Use NURBS cylinders to build the jet-pack – and remember to keep the geometry simple. Import a *Poser* reference image of the secret agent with his arms bent to help you make the jet-pack proportionally correct.



23 Now create texture maps for your jet-pack components and helmet. Good textures make your model seem more detailed – and most 3D applications can export an unwrapped picture of the model's UV coordinates. Paint your textures on in *Photoshop*, using these flat image maps as a guide.



24 Test the textures by mapping them back onto your 3D model. If they map correctly in the application they were created in, then they should map in *Poser*, because it uses the same the UV coordinates for each component.

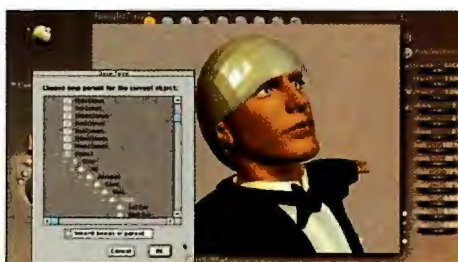


25 *Poser* accepts a variety of 3D formats, including Wavefront OBJ files. Avoid DXFs, though, because they import into *Poser* as one solid object and lack that vital UV information. I exported my models as Quickdraw 3DMF files: this enables *Poser* to read each part of the model as a separate component, and I can apply different textures to each element.

STEP THREE importing props Taking it all into Poser



26 Put the helmet 3DMF or OBJ file into the *Poser* Props folder. Go to File > Import > Quickdraw 3DMF. In the dialog box, type in 20 per cent to make the helmet import at a size in keeping with the Figure. Use the y-Tran and z-Tran sliders to move the helmet up to the character's face.



27 To make the helmet move with the head, you'll need to make it a child of the head. Select the Helmet. From the top menu bar, go to Object > Change Parent. From the Choose Parent dialog box, select Figure 1's head. Test the link by moving Figure 1's neck.

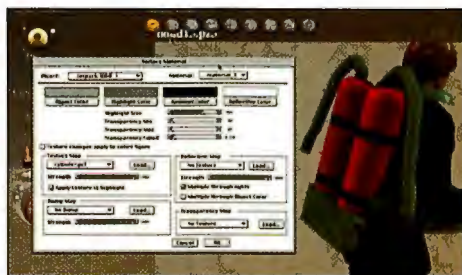


28 Import the jet-pack. Scale and position it. Use the Change Parent menu to link the pack to the main Figure's chest. It now looks and acts as if it's strapped to our 007.

STEP THREE tweak time Only last-minute adjustments now...



19 From the Camera Controls menu, switch to the Hand Camera. Go to the Hands palette and select a fist pose. Fine-tune the fingers if need be. Once you've posed the right hand, go to Figure > Symmetry > Right to Left, to instantly pose the left hand.

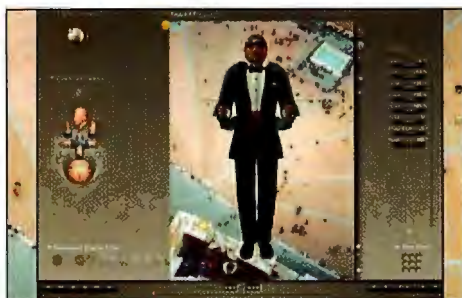


20 Go to Render > Materials. In the Surface Material Dialog box, go to Object and select the jet-pack. The jet-pack object sports 13 materials in all – one for each component. On each material, go to Texture Map and click Load to bring in the relevant texture.



21 If you're using the default *Poser* figure, import the P4 man texture for Figure 1. If you've coughed up the cash for Michael 2.0's textures, import the Daz hi-resolution maps for his face and body. These photorealistic texture maps can lift your models to a completely new level.

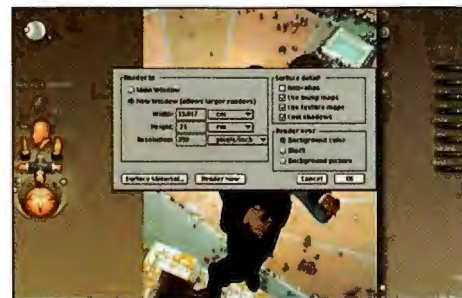
STEP FOUR final render Render our hero – and put him into action!



22 Import a rendered background image (Background.jpg on the cover CD) into *Poser*, so you can align the angle of *Poser*'s camera correctly. Use the Light Controls Palette to make the lights in your *Poser* scene match those in the background image.



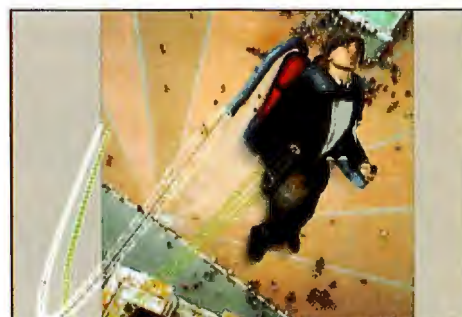
23 Pose Figure 1 by selecting and manipulating his limbs. All the linked clothes and props now move in an appropriate way. Go to Figure > Use Inverse Kinematics, and turn off the right and left legs. The feet are no longer locked to the floor, enabling you to bend the legs.



24 Go to Render > Render Options to select the size of your output. Don't render over the background picture – choose a neutral colour instead. The *Poser* rendering includes an alpha channel that you can use to isolate the figure from the background. Add the rendered image using *Photoshop*.



25 In *Photoshop*, go to Image > Adjust and drop the saturation of the *Poser* render to match the colours in the background photo. Duplicate the *Poser* Figure layer. Apply a radial blur to the duplicated layer and reduce the opacity of this blurred layer to give the spy a sense of motion.



26 To create a smoke contrail from the jet-pack, draw a curved path and extrude a circular spline along it to create an appropriate shape. Texture-map the curved object with a semi-transparent smoky texture.



27 Add the contrails to the *Photoshop* document, then knock out some missiles in your favoured 3D application. Finally, add a little noise to the digital elements to match the grain of the background image. Now relax with a dry martini – shaken, not stirred, of course!



BLOCKS OF LIFE

This sequence of stills illustrate key moments from an animation sequence showing Dink, one of *The Cubeez* characters, balancing some building blocks on his head. Note the changes of expression and other subtle details.

[1] Dink begins to lose control...

Animation: Bringing your characters to life...

With the intense pre-production groundwork laid, it's time to focus on the exciting part of the process: the animation itself – but trouble-shooting is still high on the agenda...

BY DAVE OSBORNE

Finally, after all that lengthy preparation – after all those frantic phonecalls, script rewrites, creative meetings and dodgy voice recording sessions – you arrive at the heart of the process: the animation. It's all been worth it, of course. After months of arduous toil, you and your art team are now fully aware of what needs to be done – and there's nothing for it but to get to work. This is one of my favourite points in the whole schedule; seeing all the story, design, voice and animation elements coming together on screen for the very first time. Remember, this is probably the first time you, the director, have seen what's been inside your head for months. More importantly, it shows your team and executive producers where you've been coming from in your dogged insistence to do certain things a certain way.

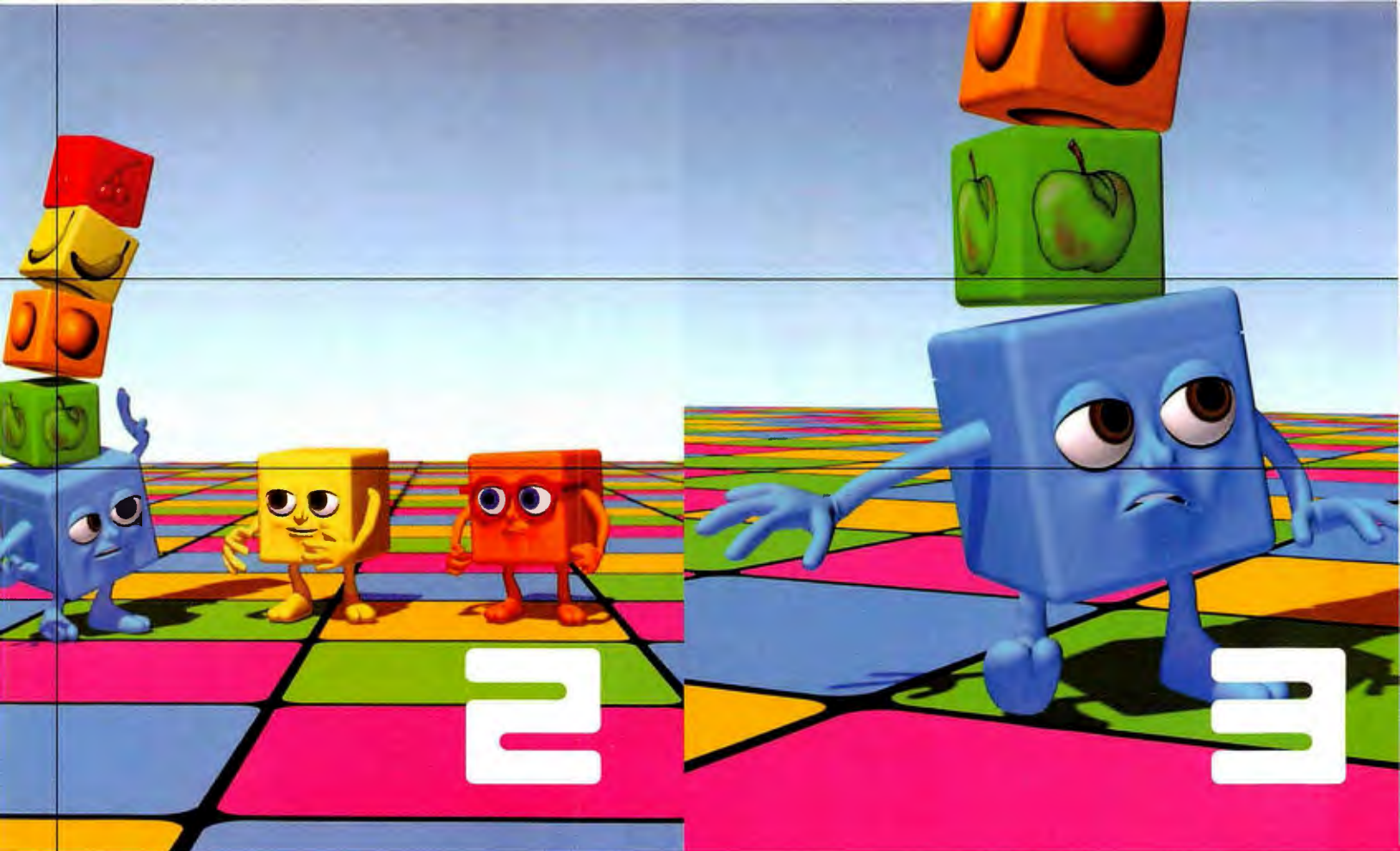
How you navigate yourself through this part of the process depends on your own background. Many directors start out as animators and therefore have a close affinity with the animation team. Such directors will want to work closely with the artists as they get to grips with the material. Other directors, however, have come from the storyboarding or editing departments. My own feelings are that, while having a vision is wonderful, having the craft to implement that vision is a necessity. You must

understand character animation and the principles underlying it if you're going to direct the animators successfully. You'll need their respect to get good results; otherwise you'll always be in the dark as to why some scenes don't work, when – on paper at least – they should.

BEST ANIMATORS

Your first step is to put together a top animation team to do your work justice. You may have high ideals about who you want to recruit here, but remember that you always have to compromise. That's a commercial reality. Many people judge the quality of TV animation against feature films, but they're based on different financial models, so such comparisons are usually unfair. Nevertheless, the broadcast medium has much to offer in its own right. The last ten years have seen something of a renaissance in TV animation, with much innovation and numerous technical advances – plus a new generation of animators with fresh ideas and concepts – having a huge impact on the quality of small-screen programming.

Inevitably, your team of animators will be a blend of experience and ability, but nearly everyone will have the desire to create the best animation they can, given the time and resources



available. Your duty here is therefore to ensure they're heading in the right direction right from the start. My routine always involves showing the animatic to the animators at the start of work on an episode, preferably altogether as a group. I then like to brief the animators individually with their particular batch of scenes, so that I can focus on what's important on a one-to-one level. This is a chance for the animator and myself to check whether everything is achievable both on screen and on time.

In determining work allocations, I always try to reflect what I think are people's strengths; someone who is good at action will get the more physical sequences, while animators whose talents lie elsewhere will be given other scenes. In one scene of my recent kids' TV series *Cubeez*, for instance, a character had to juggle: something, in terms of 3D CGI, you just can't fake. Fortunately, one animator on my team, Damian Surr, could juggle extremely well, and so he got the sequence – which he implemented excellently. Because of his first-hand knowledge, he

was able to exactly replicate the pattern the balls make in the air, and the weighting of the elements. Alternatively, you can cast the animators to specific characters. While this works well if you have a host of characters – and is used widely on feature film work – it wasn't really possible on *The Cubeez*. We only had four main regular characters, and at one point up to 20 animators. Personally, for TV series work, I've found both approaches work well. In the end it may just be logistics which determine which particular approach you adopt.

Getting the best from your team is less easy to define. Encouraging less experienced animators in order to nurture

their talents is obviously important. Of course, they'll make mistakes – but this isn't a problem as long as they learn from them. Equally, while the less experienced

artists master the fundamentals, your more experienced animators must feel that they can improve their own technique. Therefore, giving experienced animators responsibility and respect is just as important. Your reward for nurturing new talent and giving responsibility to more experienced members is

commitment. When the difficult days come – and they will come – your team will gladly stick by you and do what's required, above and beyond the call of duty.

JUST ADD STOCK FOOTAGE

Using stock animation, or generic animation, is one practical way to speed up the animation process. With 3D CGI, you have several options. You can set out from the start with scenes or sequences that you pre-animate before the main production, identified and indicated during the script stage. But there can be problems doing this: you usually find that the eye line or pace doesn't actually fit when you come to insert them into the show. I think it's often better building your stock scenes as you go along, taking useful scenes from the actual episodes and inserting them into subsequent episodes at the animatic stage, so everyone can see how they interact with scenes around them.

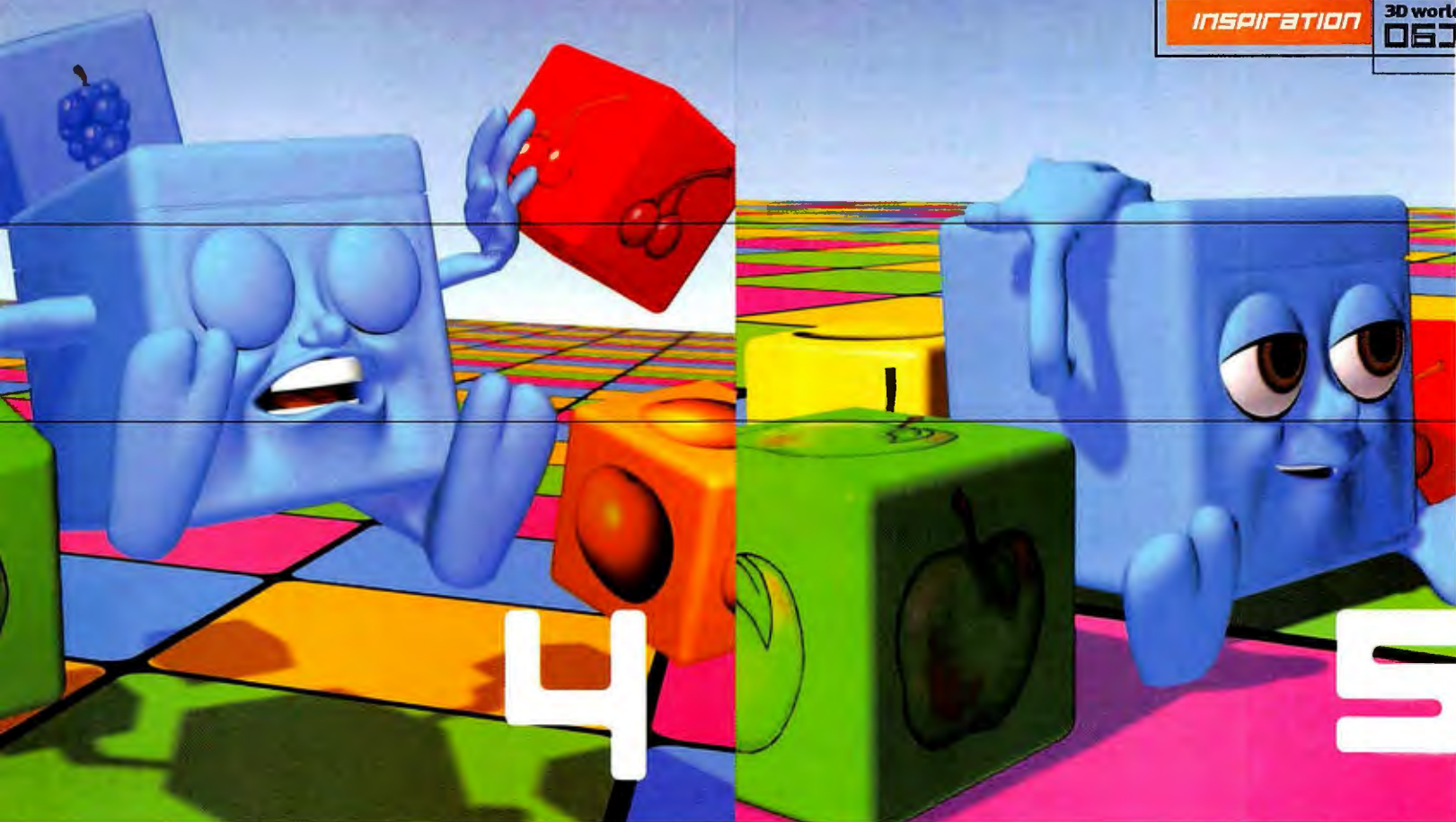
You and your editor need a good memory here – even with all the cataloguing in the world, it's handy to be able to recall scenes that might work from your own mental library. Elements most definitely worth doing are basic walks and runs, worked out and saved in a form easily accessible to the software platform you're working in. This helps maintain consistency throughout the series and is a useful tool for the executive producers, helping them to understand how the characters move. In the past, I've used them as contractual sign-off points. Ultimately, stock animation helps to reduce the amount of work required for each episode and enables your animation team to focus on other scenes which help give the show higher production values. It's not just an easy case of balancing the books.

Thumbnails are also a good habit for animators to get into while planning scenes, enabling the director to see how they are visualising a particular sequence. Again, because of time constraints on a TV series, it isn't always possible to thumbnail

[02] He's aware he's in trouble as his Cubeez chums look on.

[03] The camera is now brought in closer, so we can see Dink's expression – clearly anticipating when the bricks will collapse.

ENCOURAGING LESS EXPERIENCED ANIMATORS IN ORDER TO NURTURE THEIR TALENT IS IMPORTANT



out every scene – but by thinking out a sequence beforehand, an animator can ultimately save time when it comes to realising a particular moment in the story.

Damian Surr outlines his routine for animating on *The Cubees*: “The first thing I look at is the storyboard while listening to the audio track of the scene a few times. That usually gives me a good visualisation of the placement of things and the ‘acting’ that the characters will be doing... If we got an allocation on Monday morning that had to be completed by the end of Wednesday, I wouldn’t start animating until after lunch on the Monday, but I would know exactly how much time I planned to spend on each section after that planning stage.”

Once the animation is rendered and output, it’s time to start assembling things. Scenes that are totally wrong, such as reversed fields, can be re-rendered at this stage. However, you can’t solve some problems – continuity and eye-line, for instance – until you’re in the edit suite.

OFFLINE EDIT

Unlike live-action footage, animation is largely pre-edited using the storyboard and especially the animatic, so there should be no surprises once you assemble the rushes. Sometimes, however, things don’t quite gel. Some issues can be resolved by editing them out, which is where having a slightly overlong animatic comes into its own – but not everything. So you may have to call for re-shoots. Note, however, that a production’s efficiency is often measured by the number of re-shoots called at this stage. But don’t let this stop you: while it will have an effect on your budget and schedule, it’s your responsibility to ensure your vision is realised as accurately as possible, and if that means a few re-shoots, so be it.

If you are having a *high* percentage of re-shoots at this stage in the production, though, examine your lines of communication. Even if you have a clear idea what you want

[04] And there they go! The cubes tumble noisily to the ground...

[05] Fortunately, Dink is okay – if a little stunned.

IT IS SO
IMPORTANT
TO PLAN AND
THINK WHAT
IT IS YOU WANT
IN A SCENE
BEFORE YOU
GET TO THE
ANIMATION...

to create, others clearly do not. It’s your job to ensure they understand, so check back through the production process and see where your communication is breaking down.

The purpose of the offline edit is to produce an episode to broadcast length, identify any problems and set about resolving them. As well as calling for animation retakes, you may have to re-record the odd line of dialogue (or even steal it from another episode if you can!).

Finally, once the composer has provided the music, an episode can move on to post-production, which includes track-laying the sound effects, balancing the voices, a full audio mix with the music, and finally the online edit, where the pictures are polished for mastering.

PREPARATION IS KEY

In summary, if animation is to be successful, prior preparation is the key. By the time you get to this stage, you should have built the episode structurally using the animatic, leaving your main focus solely on the animation. Throughout the extensive pre-animation production work, I’ve constantly emphasised the need for good communication, both verbal and visual. By the time you get into the offline edit there really should be no surprises, merely corrective work on minor problems. This is why it’s so important to plan and think what it is you want in a scene *before* you get to the animation stage. Deciding afterwards is both expensive – and unpopular with the producer!



Dave Osborne is a freelance animation director who entered the industry as an animator on the 2D TV series *The Tubemice* in 1987. Since then he has worked in a number of animation studios. While at Telemagination he directed a TV series called *Wiggly Park*, which was followed by pilots, pop promos & commercials. He also directed some episodes of *Noah’s Island* and *Captain Pugwash*. *The Cubees* was his first directing experience of 3D CGI. Since that he has made several pilots and a commercial in 3D and he is now developing some of his own ideas for television.

qanda

Got a question for our 3D experts? Send it to us at 3dw.qanda@futurenet.co.uk
You can also find more Q&A advice on our Web site at www.3dworldmag.com



How can I create flowing waters, like a stream, in *3ds max*? MARK TAYLOR, VIA EMAIL



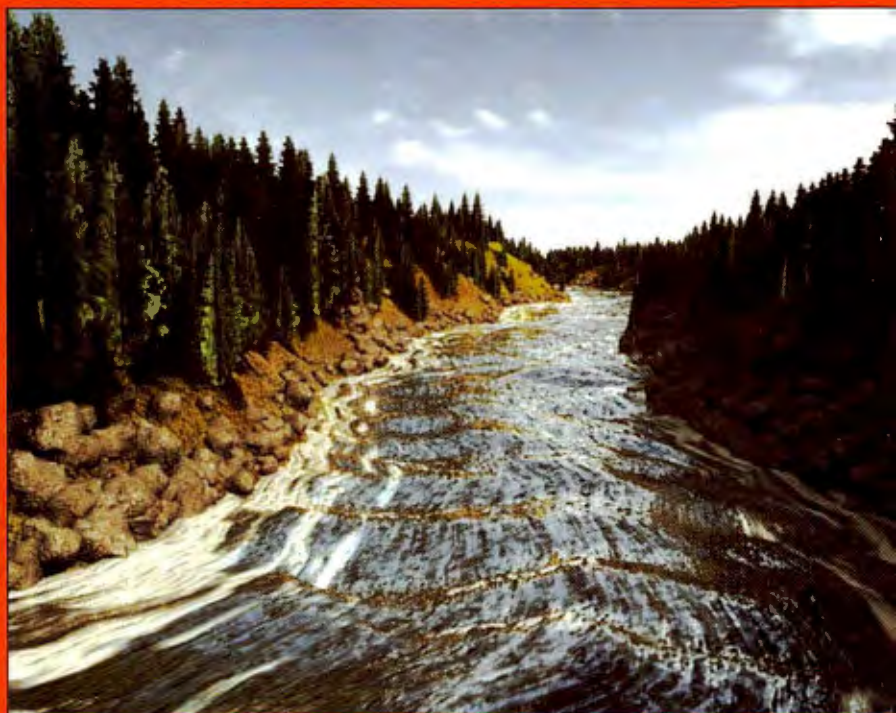
Check out the cover CD for the stream AVI file which accompanies this Q&A.

Observe any stream or river in real life and you can see how water flows irregularly through the landscape. It turns, glides over rocks and around bends, and moulds itself to the contours of the river bank. Ripples and slight waves also flow along its path, deformed by the contours of the channel through which it moves, with slight foamy waters near its slower-moving edges. Now to transpose this information into our 3D scene.

The banks and waters start off as simple long and thin Plane primitives. Create a bank plane, and clone and offset it to create the water. You need only model one bank, because you can create the other from a simple mirrored clone (later on, you may wish to deform the clone further to avoid similarities in the meshes). By using FFDs [FreeFormDeformations] and Noise modifiers, create an unevenly shaped landscape in the Z-direction, so one side of the plane dips down vertically to form the curved bank. For now, don't worry about the horizontal deformation to create the cut-out landscape. We'll tackle that later.

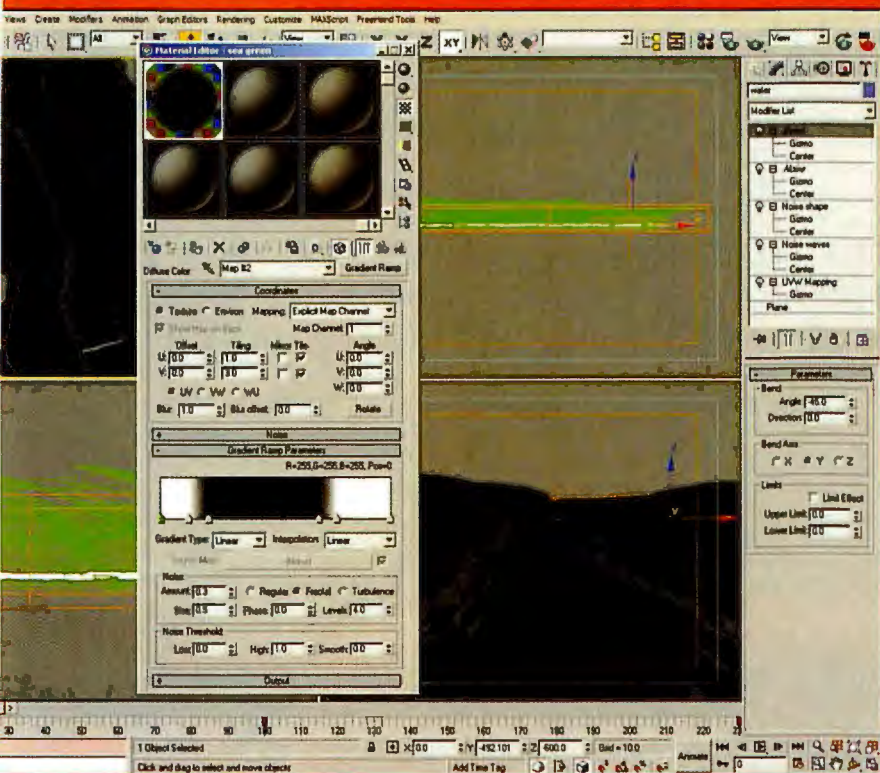
The water plane should now have a Noise modifier or two applied to create the ripples and waves as the water flows down it. Create a noise modifier for the waves, with a small deformation in the z-axis and rotate it so it's almost at 90 degrees, facing lengthways down the stream.

Finally, clone the bank plane, mirror it, and then position it on the opposite side of the water plane. Now comes the interesting part: to add more realism to the shape of the landscape we need to deform the banks and the water in exactly the same way, to prevent any wayward overlaps and holes showing. Select the bank and water planes and create a Noise modifier. This modifier will instance across all three objects; whatever settings you apply to one will automatically apply to the others. Set the size to 'Very',



check Fractal and crank the X spinner up until you feel the stream has been deformed enough!

We've now got our deformed stream, but look directly down its path and you can still see the end of the planes, which doesn't



ABOVE By deforming the banks and the water Plane primitives using the same modifiers, you can easily configure how the stream bends and flows through the channel.

LEFT And here's the final render. Further ground textures have been added to both banks (which are deformed by the modifiers) and low poly trees and rocks included to speed up render times.

5 expert tips for 3ds max

Getting the best from 3ds max relies on more than an in-depth knowledge of the app's instruction manual... **BY PETE DRAPER**

Speeding up X-Refs

Speed up the use of X-Ref objects and scenes in the final composited scene by turning off Auto Update. By default, *max* constantly monitors the X-Ref'd file for changes, and, especially across a network, this can dramatically slow down even the simplest operations. This option should also be turned off in affected files if additional objects and scenes are X-Ref'd into those scenes. Also, when not required, turn the relevant X-Ref'd object or scene off. This updates the viewport much faster.

Creating Area Shadows

You can create soft area shadows in the same way *max 4* creates its depth-of-field effects. First, link the spotlight (or direct light) to a dummy. Add a Path controller to the dummy and make it animate one full rotation around a circular or star-shaped path for one frame. Now position the target at the object to be lit. Using Scene Motion Blur, you can create multiple passes which are then composited together to create the feathered effect of the raytraced light. (Note that, because you're using Scene Motion Blur, this method takes considerably longer to render one image and is therefore only really suitable for stills.)

Quick Video Post Effects Amendments

Re-rendering a scene to test and tweak effects can take forever. Instead of re-rendering a scene each time you amend the value of a filter in Video Post, render out the scene with no effects to an RLA file, and include all channels when prompted. Reset Video Post to clear all Events, add an Add Image Input Event, and then add the rendered RLA file. Apply the filters to the image as per normal. Re-rendering is now much faster, and you can perform the operation to an animation by creating an IFL file of RLA's and loading that instead!

Faster Map searching

Cutting down the number of unnecessary map paths in a scene can make loading in lost or relocated maps quicker, especially across a network, because *max* doesn't have to look through every folder listed to find it. When prompted, load in the new map file and remove the obsolete ones for that particular scene. *Max* then works through the listed folders one after another to find the required maps; the shorter the list – and the further up the list your map – the faster *max* will find it.

Speeding up renders

If your render times are becoming unbearable, try removing some elements in the scene that aren't being viewed and which have no effect on the current render (i.e. items off-screen that aren't casting shadows or present in any reflections). Amend camera-clipping values to remove geometry from the renderer if it's too far in the distance to be visible. And try rendering your scene off in passes and compositing later on. Also, make use of the Level of Detail utility to automatically switch between low and high polygon objects, depending on their distance from the camera or percentage viewed on screen.

ENSURE THAT A SEPARATE UVW MAP HAS BEEN ASSIGNED TO THE WATER PLANE BEFORE YOU MAKE ANY DEFORMATION TO ITS SURFACE

look very attractive. So, with all three objects still selected, create a Bend modifier and amend its settings so that all three planes bend around to the left (or right, depending on preference). This now hides the end of the planes.

To create the flowing water, ensure that a separate UVW map has been assigned to the water plane before any deformation to its surface, and animate the Gizmo moving downstream. A simple Gradient Ramp map assigned to this plane now conforms to the deformations further up the stack! Also, in Track View, copy and instance copy the UVW map's Gizmo position to the Noise Wave modifier we rotated earlier on. The Gizmos now move in unison, and deform and texture the surface as they pass down the plane.

BY PETE DRAPER



How can I make a character pick up an object in *LightWave 7*? You'd think it would be easy, but I can't figure out how to do it!

BILL TROUGHTON, SOMERSET, VIA EMAIL



If your character needs to hold an object, the simplest thing to do is to parent the object to a bone in the character's hand, so that when it moves, the object moves as well. However, if you

want the object to start, say, on a table and then have a character pick it up, the process is a little more complicated, because you need to change the parent from the table to the hand halfway through the animation.

Unfortunately, on its own, *LightWave* cannot do this kind of dynamic parenting, although with *Parent*, an excellent plug-in from Worley Labs, it can. However, even if you're using *LightWave* straight from the box, there is a workaround. In the scene below,

TO ANIMATE THE PICK-UP, WE NEED TO CHANGE THE HAT'S PARENT FROM THE CHARACTER'S HEAD TO HIS HAND – AND THAT REQUIRES A LITTLE TRICKERY

the magician is about to remove his top hat from his head in order to extract some magical marvel from its inner depths. [As you do – Ed.] To animate this, we need to change the hat's parent from the character's head to his hand. Start with the hat parented to the head and, on a specific frame, bring the arm and hand up into a position so that they grip the rim in a convincing manner, as shown. Now comes the clever part. Clone the hat so there are

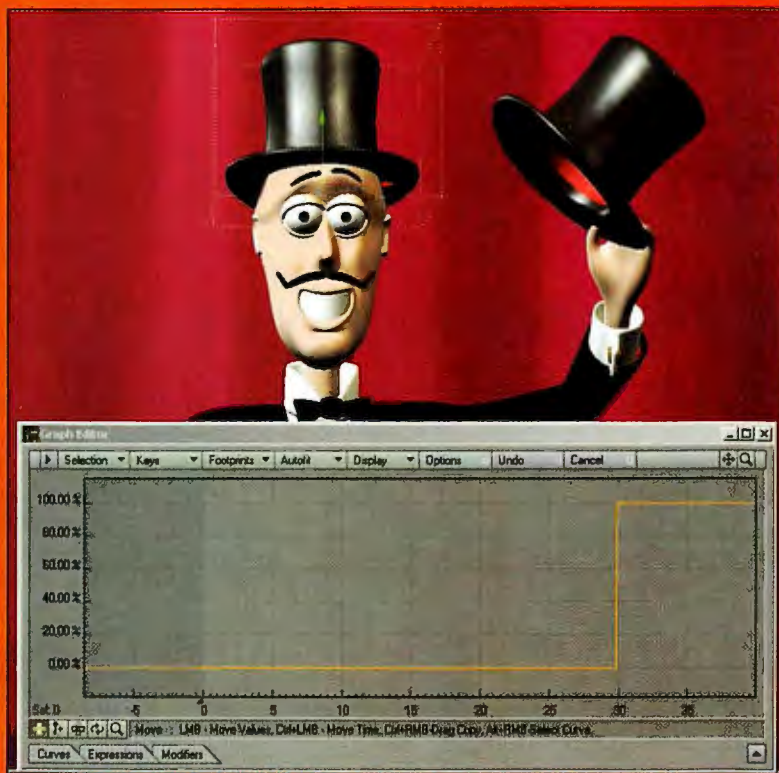


LEFT The magician is readied to remove his top hat at a specific frame.

5 expert tips for LightWave

LightWave, the colossus of the 3D animation world, still has a few surprises up its respected sleeve...

BY BENJAMIN SMITH



ABOVE The secret? There are, in fact, *two* hats here – but one is always hidden, thus giving the illusion that the hat passes from head to hand.

two copies of it, then activate Parent in Place from the Scene tab. Now use the Scene Editor to drag the copy of the hat from the head to the hand, so that it becomes a child of it. You'll see that with Parent in Place, the hat stays exactly where it is, but in the time slider you'll notice a yellow tick, showing you that a keyframe has been created at that current point. Hit Enter and copy the keyframe to frame zero before hitting Delete to delete the key at the current frame. If you now scrub the time slider, you'll see there are two hats – one permanently attached to the head and one permanently attached to the hand.

All you need to do now is hide the hats so that when one is visible the other is invisible. With the hat on the head selected, press 'P', and from the Rendering tab hit the 'E' button next to Object Dissolve. Now go to the Graph Editor and add a keyframe so that the hat is 100 per cent dissolved at the relevant frame – setting the Incoming Curve to Stepped will give you the correct appearance for the curve. Repeat for the other hat, but this time invert the settings, so the hat shifts from 100 to 0 per cent dissolved at the same frame. You'll need to deselect the hats to see the effect, because they remain visible if selected.

Now when you drag the time slider, you should see the magician neatly lift his hat from his head in one fluid motion. Because the hats line up precisely at the same frame, you never see that one hat is switched for the other during the animation. Clever, eh?

BY BENJAMIN SMITH

Weight map solution

If you deform a mesh in Layout with a displacement map, you can use gradient set to alpha to make a weight map control which points it affects. However, if you use a SubPatch object, you'll find the weight map doesn't work properly, giving you sharp edges where you should see a gentle fall-off. The trick is to make sure you apply a weight of 0.0 rather than 0 per cent to those points that you want to be unaffected.

Two copies at once

By default, starting *LightWave* launches the Hub, which links Layout and Modeller. However, sometimes it's useful to have two copies of *LightWave* open at the same time. Copy the *LightWave* shortcuts on your desktop and edit the copies to read 'C:\LightWave_3D_7.0\programs\lightwav.exe /O'. Adding the '/O' on the end prevents the Hub starting, so you can load as many *LightWaves* as you like.

Square brackets

In Modeller, selecting different parts of an object can be tricky. Make life easier by using the square bracket keys [and]. With a point or polygon selected, pressing] selects all the points or polygons that are directly attached to it. Likewise, pressing Shift + [selects or deselects all the points or polygons immediately adjacent to the selection. This enables you to easily expand and contract the current selection at the press of a button.

(Not) Arrows of desire

Importing objects from other scenes with Load from Scene also imports expressions, but if the same expressions are already present in the original scene it tends to stop them working by highlighting the variables with >>> and <<<. To remove these bothersome arrows, load the scene into a text editor like *Notepad* or *SimpleText* and use Find and Replace to delete them. Save the result, and when you reload in *LightWave* your expressions will work again.

UV mapping coordination

If you're having trouble figuring out how to apply UV mapping coordinates to an object, just create a new EndoMorph target and bend the geometry into a new shape that makes it easier to apply UVs. For instance, you could roughly straighten out a section of pipe and apply cylindrical UVs. Just delete the Morph when you're done by hitting _ on the keyboard.



How do I create a *Superman*-style X-ray vision effect in Maya?

ROB MCCABE, SHREWSBURY



To help illustrate the solution to Rob's problem, I took a source photo using a digital camera, making sure that there were several objects blocking the subject to sell the X-ray vision idea.

The plan is to replicate the foreground concrete block and security barrier in *Maya* and apply a suitable X-ray texture.

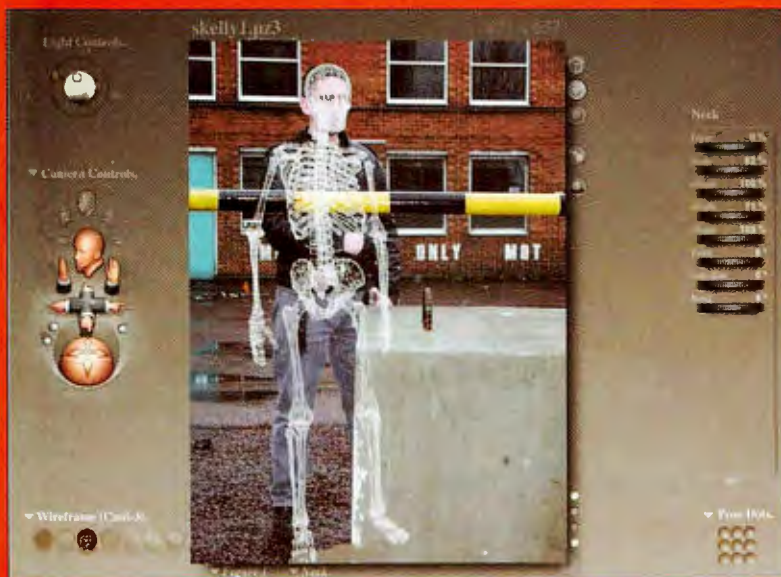
To supply a skeleton for the subject of the image, use *Poser*. (You could build one yourself, but *Poser* has a purpose-built skeleton which saves a lot of time.) Import the photo you want to convert to X-ray vision by choosing File > Import > Background picture (or you can practise with the one I used, which is on the cover CD as 'background.jpg'). Now let *Poser* change the size of the interface to match the proportions of the background picture. Go to the Figures palette and open the Additional Figures sub-menu. Select the Male Skeleton icon and click Create New Figure (the double-tick icon). The default *Poser* figure is now replaced with the skeleton. Use the move X, Y and Z icons to roughly position the skeleton to match the subject in the photograph, then use the rotation trackball to make the skeleton stand at the same angle to the camera as the human subject.

Go to Figure > Inverse Kinematics and turn off the left and right legs. They're no longer locked to the ground. Switch to wireframe mode and you'll see the skeleton and the reference image you're trying to match it with. Select the skeleton's shins and thighs and use the sliders on the right to Y-scale the left and right legs by around 87 per cent, to match the proportions of the stockier figure in the background image. Twist and bend the legs to match the position of the actor's. Scale the spine and abdomen down in the y-axis. Twist the hip to get the legs matching. Now twist the spine to match the upper part of the body. Finally, scale and position the arms in the same way you did the legs.

Now export the skeleton into a package like *Maya* to add an X-ray Shader to it. Create the X-ray Shading Group by adding a black and white circular gradient to your Shader's transparency channel. The gradient makes the texture solid at the edges and transparent at the centre. Make the colour channel a vivid blue. In separate scenes, build a barrier, a block of concrete and a gun. Align them to the background image and apply the X-ray shader to them. Now render out all the components separately and take them into *Photoshop*.

Blend the 3D layers using the Screen and Colour Dodge modes and give the 3D components a layer mask. Fill the layer mask with black. Draw a feathered circle on the mask where you want the X-ray effect to appear. Fill the circle with white to make the X-rayed components now appear over the background image within the circular shape. Finally, use the Clone Tool to spray adjacent areas of the windows and brickwork over parts of the actor and barrier, to make them seem translucent.

BY GEORGE CAIRNS



ABOVE You're looking a bit peaky. Use *Poser* to create and position a skeletal structure for the subject of the image.

RIGHT & FAR RIGHT Is that a gun in your pocket? Simple 3D models composited onto a background photograph sell the illusion of X-ray vision.



PICTURE COURTESY OF: © Allison Lea



YOU CAN BUILD A SKELETON YOURSELF, BUT WHY BOTHER WHEN *POSER* COMES WITH ONE READY-MADE FOR THE OCCASION?

5 expert tips for Maya

The cool cat of software modellers, *Maya* can still surprise, thanks to an impressive rack of features... **BY GEORGE CAIRNS**

Transparent tip

Use differing levels of gradients to create varying shaders for your X-ray texture. The gun is more dense than flesh and bone, so make the gradient in its shader's transparency channel less subtle than the gradient for the skeleton's shader. This makes the gun seem more solid than the bones and adds variety and depth to the X-ray textures.

Texture rendering

Maya's shading networks enable you to create powerful procedural textures without scanning in any source file. However, procedural textures take longer to render than textures using external source files. To speed things up, use the Convert to File Texture tool in the HyperShade editor.

To comp or not to comp

You could use *Poser* to render the skeleton and the other objects over the background image. However, this would provide little control over the transparency of the various elements – and you'd then have to re-render every time you wanted to make changes. Rendering in layers and compositing in *Photoshop* gives you far more control over the finished image. *Maya* is fully geared up to render out the elements in the scene as separate layers; you can even render a model's colour separately from its shadows.

Good housekeeping

When putting the various renderings together in *Photoshop*, you'll end up with many layers. Good housekeeping is essential for a streamlined workflow, so label those layers sensibly. Go to the Layer palette and Alt + click on the skeleton layer. Select Layer Properties and type in a name. Then you can find relevant layers instantly rather than wasting time guessing. Additionally, you can colour-code layers to make a visual link to certain components – all the X-ray rendered elements could be coloured blue, for example.

More on masks

The layer mask is a powerful way to fine-tune your image elements without losing anything on the layer. If you give your skeleton layer a mask, you can spray on it using a black airbrush. This erases the corresponding parts of the skeleton where you spray. If you need to restore parts of the skeleton you've erased, change the brush to white and spray in those areas on the mask. They'll then reappear.



I'd like to create an etched glass effect in *Cinema 4D* for a product visualisation, but don't really know how to go about it. Any tips?

PHIL HARROW, EMAIL



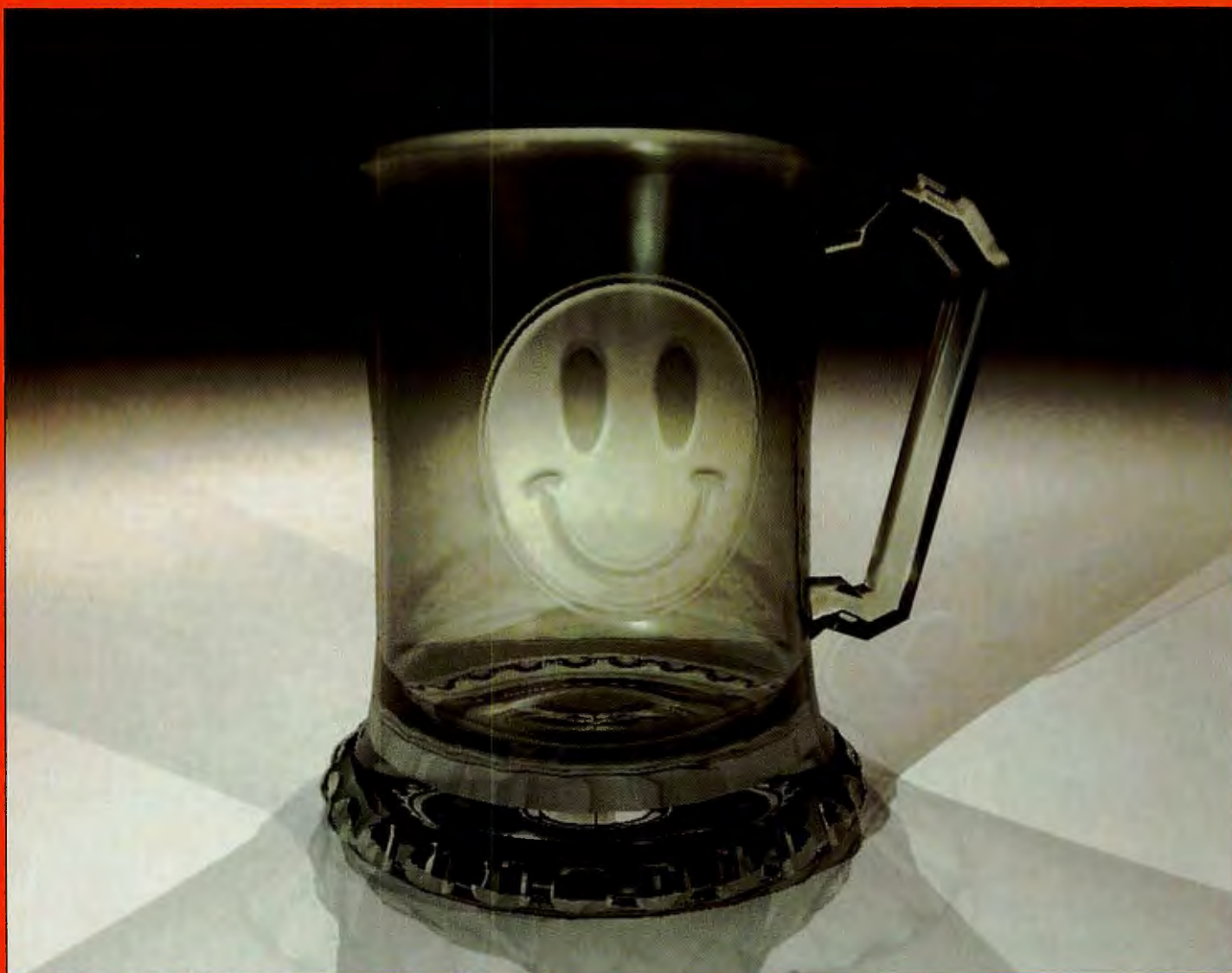
a Before we do an etched effect, it's worth mentioning that regular glass is best accomplished using texturing. Typically, real glass should have little or no colour, a healthy dose of transparency (usually around 100 per cent), some reflection, and carefully constructed specular characteristics. For the transparency setting, make sure you turn on refractive qualities with an index of well over 1.5.

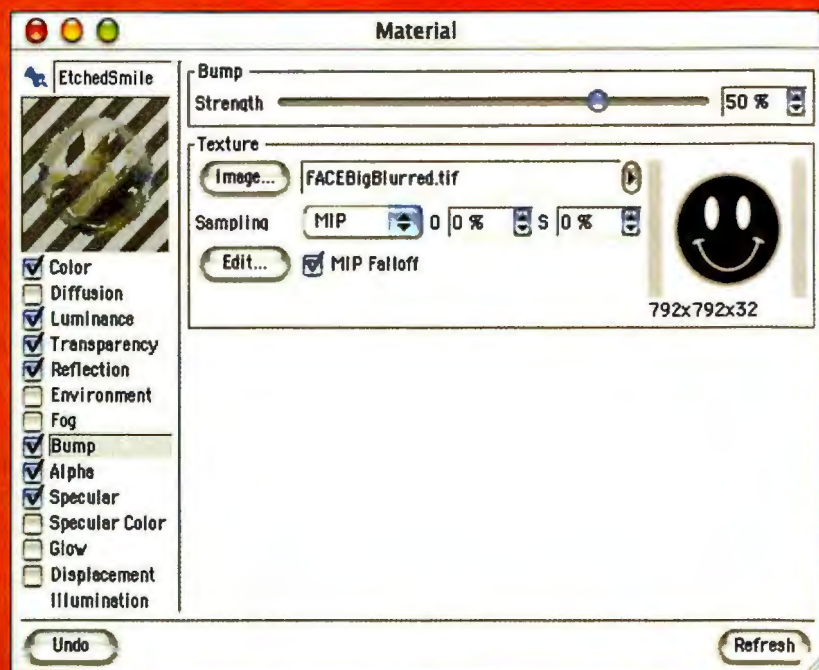
If you can, add Fresnel effects to your transparency and reflection. With these, the software calculates when light is

BELOW A simple glass effect. The etching was created in *Photoshop*. No alteration's been made to the polygonal surface; we've simply 'painted' it on using effective Bump texturing.

approaching the curved parts of a transparent surface and renders those areas as less transparent (because there's more material for the light to travel through). This denser appearance around curved edges helps sell the look of any virtual glass. So if your 3D application caters for layered materials, layer your glass material on your object.

Etched glass in the real world is usually the result of a slight carving down of the pristine surface to create a subtle, frosted effect. As with other glass objects, this is simpler to recreate using textures. First off, you'll need a copy of the same material that





you used to create your original glass texture. You'll be using this as a template.

The screenshot above shows the material window in *Cinema 4D*, although you can apply these methods to pretty much any 3D application. The Color channel should be activated, with a little bit of grey as the selected colour; this helps make the etched design more visible. Although etching doesn't have any inner light of its own, activating a little Luminance does give the design an extra kick. Transparency and Reflection should remain the same as the glass texture.

Now to the Bump and Alpha channels. Create the design you wish to appear as an etching in *Photoshop* or *Illustrator*. In general, make sure that the design is in black and white. Create two copies of the image: a clean version and one whose lines

ABOVE The Materials dialog box in *Cinema 4D*. Notice that the key channels for etched glass are active Bump and Alpha channels. All others should be identical to the glass texture.

TAKE TIME TO POSITION THE TEXTURE ON YOUR SURFACE SO THAT IT APPEARS IN AN APPROPRIATE LOCATION ON THE FINAL RENDER

have been softened by Gaussian Blur. Bring this blurred version into the Bump Map. You'll need to do some adjustments after your test renderings, but in *Cinema 4D*, the best value seems to be around 45-50 per cent. Remember that the white areas remain raised, while the black areas appear slightly indented.

The crisp version of your design should now be imported into the Alpha channel to define where the ends of the design are to be. Remember to 'drop out' the areas of the texture that are to be un-etched. These areas should appear as normal glass. Apply this new material to your object as a layered material. Be sure to turn off back projection and set your texture not to tile. Typically, cylindrical mapping works best for glasses and provides the correct distortion. Take time to position the texture on your surface so that it appears in an appropriate location. Now render – and amaze your client!

BY ADAM WATKINS

5 expert tips for Cinema 4D

Fancy some choice tips to help you get the most from Maxon's much-loved 3d animation studio? Then read on! **BY ADAM WATKINS**

Learn to work in one window

Although this goes against the advice levelled at beginners, familiar users should only keep the Perspective View Panel open. As you work, your machine stays crisper because it doesn't need to draw the same scene four times. Of course, to work effectively using just one View Panel, you'll have to make sure you're good at moving about in the scene (and thus a dab hand with the Constraint Handle system).

Keyboard shortcuts

Remember when working in one window that you can turn off (or on) Move, Scale or Rotate using your keyboard. Sometimes you'll be working so close to a particular region of a complex object, you won't be able to see the constrain handles. And for efficient workflow it's important that you're not simply click and moving/scaling/rotating in all directions. Use the X, Y and Z keys to enable your Move/Scale/Rotate to only happen in the directions you want.

Display Tags

No matter how tough your computer, use the Display Tags. These enable you to define how individual objects or groups of objects are displayed in the editor. Good 3D work relies on a competent workflow and that means not having to wait for screen redraws. If you're displaying everything with Gouraud Shading, it won't take long before even the toughest machine slows to a crawl. When you're done modelling a complex object and it's placed, add a Display Tag to it and set it to display as a Shaded Box, or even Box, so your computer can focus its energy showing you the details of the object at hand.

What an array day

Arrays can be incredibly frustrating to work with. Remember that they're set up to automatically arrange the objects with their z-axis facing outward. Normally, getting the Array to properly organise your objects becomes a simple matter of rotating your Object Axis. However, with Primitives and Emitters, this isn't an option. To take back control over the Arrays, place problematic objects into a Null Object. Turn the child object in whatever direction you wish. The Array now positions the Null Object in its inflexible way, while you can flexibly organise the orientation of the child.

HyperNURBS

Keep control of your HyperNURBS with the distance between your new faces. Many students become frustrated because their HyperNURBS objects become too soft and too round. Hard edges are possible and easy using HyperNURBS. Remember that the hardness of a corner depends on how far away each adjacent edge of the HyperNURBS cage is from the last. If a bend in a shape is too much like a macaroni tube, use the Knife tool to cut through the object, providing a new edge and more information to make the bend crisper. If the edge of a cube is too round, take the next adjacent collection of points and move them towards the corner. The more points that are close to the corner, the sharper it will be.

Houdini 5

Side Effects revamps its once inscrutable 3D app for a less technical audience – and delivers a procedural tour de force

BY SIMON DANAHER

PRICE \$17,000
(UK: £14,500)

UK SUPPLIER
Techimage

CONTACT
01367 253 868

WEB
www.sidefx.com

MINIMUM SYSTEM

- PC: Windows NT4.0 (SP3 or later)/2000/XP, 256MB RAM per processor
- Also Irix 6.5+, Linux, Solaris 8+
- Certified Graphics Cards
3Dlabs (Windows only): Wildcat III 6110, 6210, Wildcat II 5000, 5110
ATI (Windows or Linux): Fire GL2, Fire GL4
NVIDIA (Windows or Linux): Quadro2 Pro, Quadro2 MXR/EX

MAIN FEATURES

- New interactive interface
- Fast OpenGL display
- Procedural paradigm
- Rigid and soft body animation
- New character tools
- Integrated RenderMan support
- VEX scripting
- High-quality Mantra 5 renderer
- NURBS and polygon modelling
- L-Systems recursive geometry scripting
- Deep and powerful toolset
- Industry-leading particle system
- Built-in compositor

We don't quite know what it is about the Canadians. Side Effects Software is a Toronto-based high-end 3D developer (yes, *another* one), and produces a world-class graphics application; *Houdini 5* really is one seriously powerful piece of software.

You might have heard of *Houdini*. It has a reputation for being fearsomely complex, entirely procedural – and produced for propeller-headed technical directors with more than a penchant for typing in reams of impenetrable code.

With this latest iteration, however, Side Effects is eager to make its flagship title a less intimidating proposition – and, by all accounts, it has been an amazing technical achievement.

Houdini's name is more than apt. It's designed not as a collection of canned 3D solutions, but as a toolset for creating solutions tailored to a design house's individual needs. In this respect, a facility

kitted out with seats of *Houdini* would be right in feeling they could get out of even the most tortuous 3D bind.

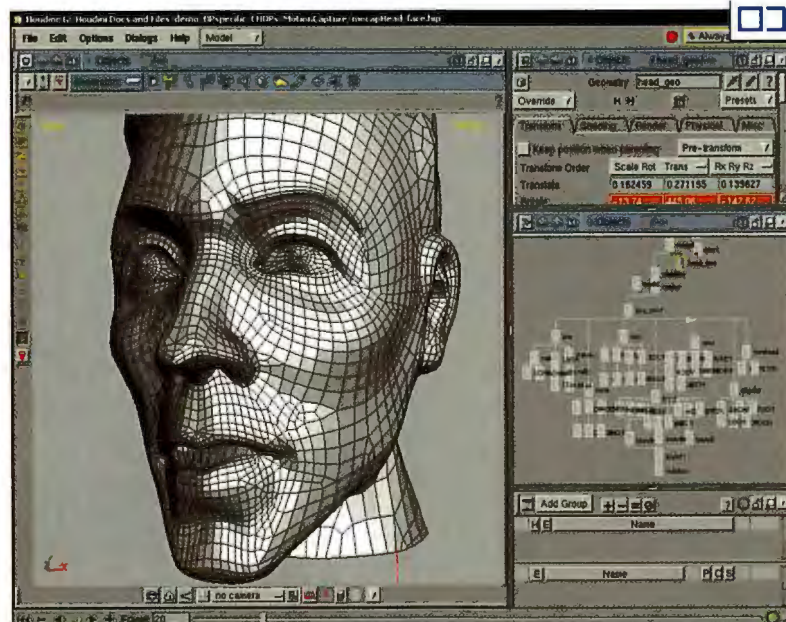
Like all great programs, *Houdini* has a well-designed workflow and its *modus operandi* is consistent throughout. This makes learning the program easier than you might think, because you can apply the same logic, techniques and conventions to the program's many different sections. In earlier versions of

Houdini, you built scenes by connecting nodes together, and creating data pathways or networks with the help of building blocks called 'Operators'. This is what

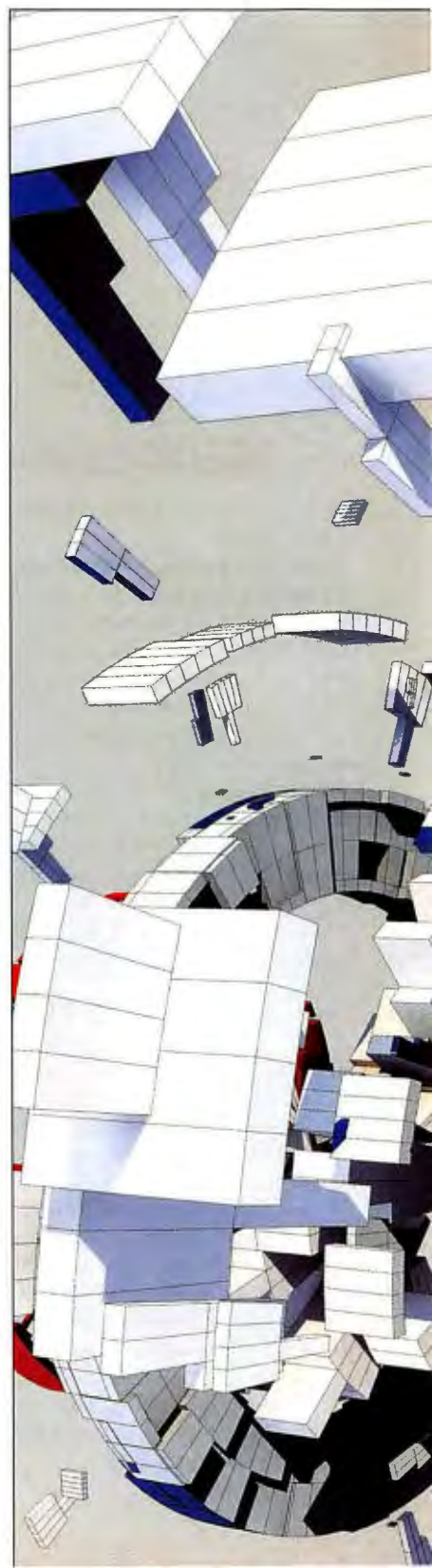
provided *Houdini* users with a non-linear construction history and a fully procedural paradigm. But it also made the program incredibly difficult for new and less technical animators.

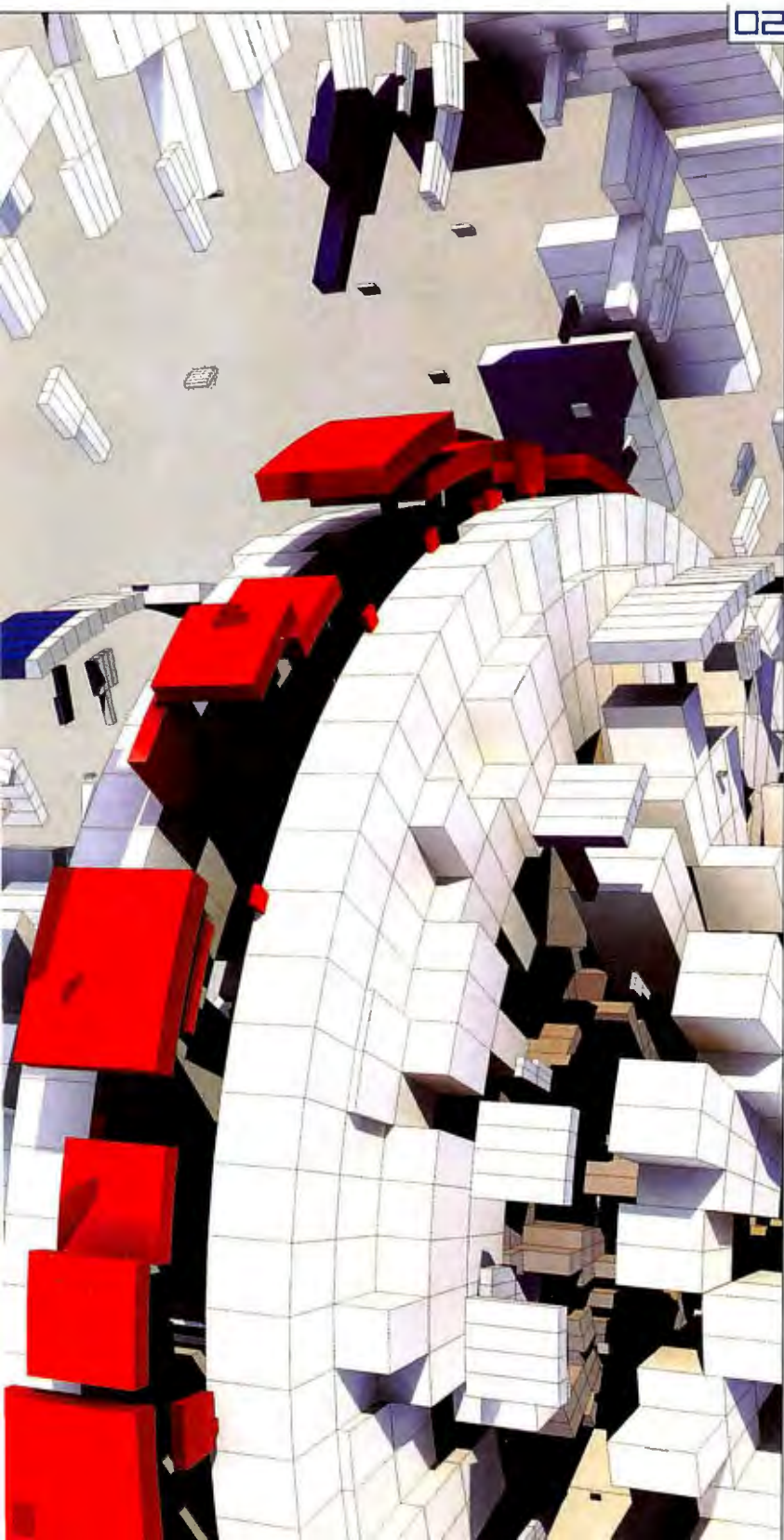
In version 5, Side Effects has added the ability to model and animate *directly in the 3D view*, which should make most 3D

HOUDINI 5 IS ONE POWERFUL PIECE OF 3D SOFTWARE



[□] The new interface enables you to work in a single 3D viewport while modelling – and navigate around the node network structure of the scene via hotkeys, too.

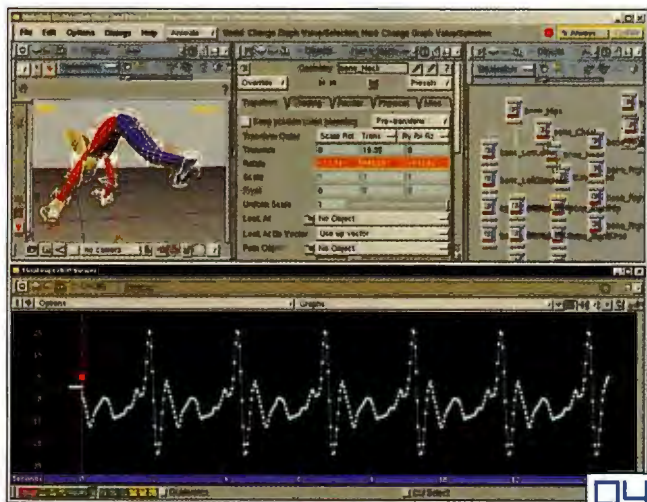




02



03



04

artists feel right at home. However, it's the deep level of control offered by the networks of procedural operators that's *Houdini*'s real strength. The closest thing we've seen to it is *Maya*'s HyperGraph, but *Houdini* takes that node-based architecture and non-linear functionality to a totally different level.

SPRAWLING INTERFACE

Admittedly, at first sight the interface looks a sprawling mess – many of the button icons are too small and difficult to recognise (you often have to wait a second for the tool tip to appear). But once you familiarise yourself with the program, everything clicks into place.

[02] Creating complex 3D work doesn't have to be difficult, now *Houdini 5* has arrived.

[03] POPs (Particle Operators) enable you to create particle systems. It's a fast, flexible and powerful set-up, here used to create animated grass.

[04] View animated channels using a function curve viewer. Here you can edit motion data, and even view the graphs created by expressions for any channel you like.

In use, the interface proves to be fast and highly customisable, comprising a number of panels which you can split and divide at will. Toolbars are fully collapsible, too. Very few gimmicks, then, just raw power and pure functionality.

Hotkeys, notably the Tab key and Spacebar, also provide fast access to functions. To add a Fractal Operator, for example, simply hit Tab, quickly type 'FRA' and the pop-up list refines itself as you type to locate the Fractal Operator.

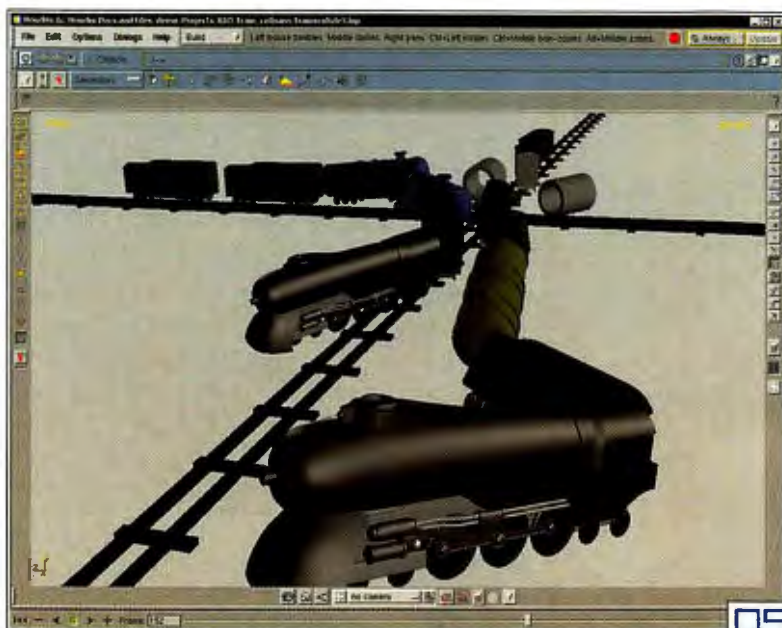
You can quickly edit pop-up slider 'ladders' values by dragging on most numeric fields, too, and use the Spacebar at any time during an operation to manipulate the view (in conjunction with a three-button mouse). In general, the interface is designed to intrude as little as possible – and Side Effects' solution, while initially daunting, is an ingenious one.

NEW FEATURES

New to the program are the advanced character animation features. Despite *Houdini* not offering quite the same refined level of support for character animation as *Maya* and *Softimage*, it is much improved. There's a full suite of character-rigging tools, including click-and-drag bone creation, point assignment and weighting via paint selections, plus a number of IK solvers. You can mix FK and IK on a bone chain, and the solvers seem

[05] Collisions and dynamics are built in. Each object has a Physical properties tab where you can set mass, bounce, friction, etc. The collision detection is pretty fast.

[06] Character animation is well supported in *Houdini*, although not quite as refined as it is in *Maya* or *Softimage*.



05

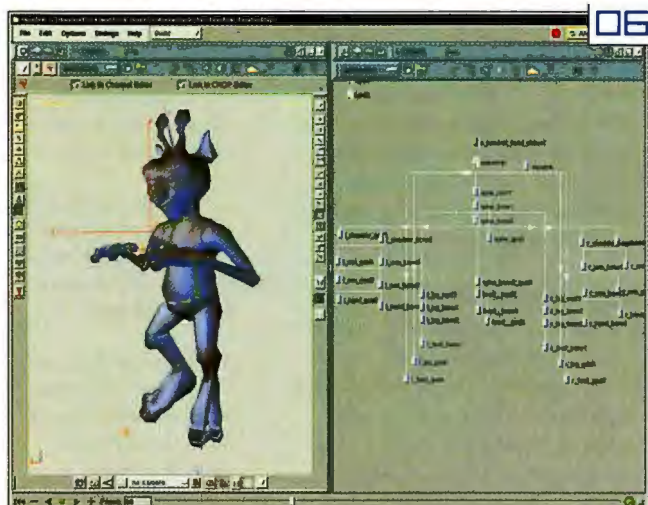
WE WERE CONSTANTLY AMAZED BY HOUDINI'S ABILITY TO SOLVE DIFFICULT PRODUCTION PROBLEMS WITH EASE...

fast enough, although we couldn't find a way to change the IK assignment for a particular chain of bones after they'd been created.

Animation control is also excellent. The Motion and Audio panels handle function curve editing with support for different interpolations on a key-by-key basis, plus the ability to handle and import dense mocap data.

Rendering is excellent, too, despite the lack of radiosity and caustics. Output from the built-in *Mantra 5* hybrid scanline-raytrace renderer is very good, but larger shops will be more interested in the integrated *RenderMan* support. If *PhotoRealistic RenderMan* is installed on your workstation, you can render your *Houdini* scenes with it directly simply by using the *RenderMan* Output OP (Operator). Object lights and *Houdini* shaders are seamlessly translated. Alternative rendering systems, including *MentalRay*, *Entropy* and *RenderDotC*, are also supported.

Ultimately, *Houdini* is a difficult package to assess. It's not cheap – especially taking into account Alias|Wavefront's recent decision to reduce the price of *Maya Ultimate* to £4,899 – but its capabilities are astounding. We were constantly amazed by its ability to solve difficult production problems with ease. A serious program, then, and not one for the faint of heart – or wallet.



06

3Dworld Verdict



PROS

- True end-to-end, non-linear procedural animation system
- Much improved interface
- Supports industry-standard renderers

CONS

- Simple tasks can be difficult to accomplish
- Very expensive
- Full functionality requires ability to script

Houdini Select

Its big brother may be great, but can a cut-down version of Houdini cut the mustard? **BY SIMON DANAHER**

PRICE £1,999

SUPPLIER

Technimage

CONTACT

01367 253 868

WEB

www.sidefx.com

MINIMUM SYSTEM

- Windows NT 4.0 (SP3 or later/2000/XP, 256MB RAM per processor
- Certified Graphics Cards 3Dlabs (Windows only): Wildcat III 6110, 6210, Wildcat II 5000, 5110 ATI (Windows or Linux): Fire GL2, Fire GL4 NVIDIA (Windows or Linux): Quadro2 Pro, Quadro2 MXR/EX

MAIN FEATURES

- New interactive interface
- Fast OpenGL display
- Procedural paradigm
- VEX scripting
- High-quality *Mantra 5* renderer
- NURBS and polygon modelling
- L-Systems recursive geometry scripting
- Deep and powerful toolset

[01] *Select* may lack TOPs or MAT operators, but you can still use SHOPs or Shaders. Apply bitmap files to objects using a VEX Decal shader, for example. Here, a VEX Hair shader helps to produce anisotropic highlights.

[02] An example of *Select*'s proceduralism. The extruded curve making a gear shape is being booleaned with a cylinder to create the hole. You can still access the curve's parameters and drag a slider to change the number of cogs in real time.

Houdini *Select* is Side Effects Software's lower-cost 3D package. Basically, it's its bigger brother, Houdini 5, stripped of a few modules – notably POPs (Particles), CHOPs (Channel Operators) and COPs (Compositing). What remains is the full *H5* interface, plus SOPs (Surface Operators – i.e. modelling), SHOPs (Shaders) and ROPs (Rendering). All of the parameters within the available modules are animatable, scriptable and controllable via expressions, as in *Houdini 5*, so in effect you have a full modelling, animation and rendering package in *Select*, built on a procedural core.

Well, almost. Material and Texture operators (MAT and TOP) modules are also unavailable, although you can apply textures to objects using a VEX shader. *RenderMan* and *Mental Ray* shaders are also supported, yet you can only render using the supplied *Mantra 5* renderer (although this is still very good). And while you can open *Houdini 5* files even if they contain, say, characters and particle animations, you can't modify unsupported parameters in *Select*. This

seems to be the driving force behind the program – it's a way for facilities that already have a seat of *Houdini 5* to be able to more cost effectively spread the time-consuming jobs of scene set-up and animation. Character rigging tools also appear to be absent, although this is presumably done by a TD in a full version of *Houdini*, before the file is sent to animators kitted out with *Select*.

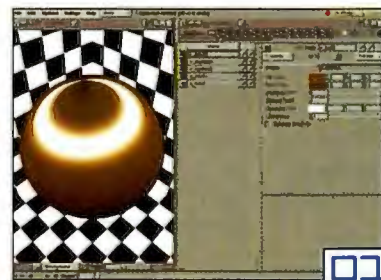
COST DISADVANTAGE

As this review was being written, Alias|Wavefront announced its price cut for *Maya*. In the UK, this puts *Select* at about £500 more than a seat of *Maya*

SELECT CURRENTLY COSTS £500 MORE THAN A VERSION OF MAYA COMPLETE

Complete. (In the US, the prices are the same: \$1,999. The reason for this transatlantic price hike remain unclear.)

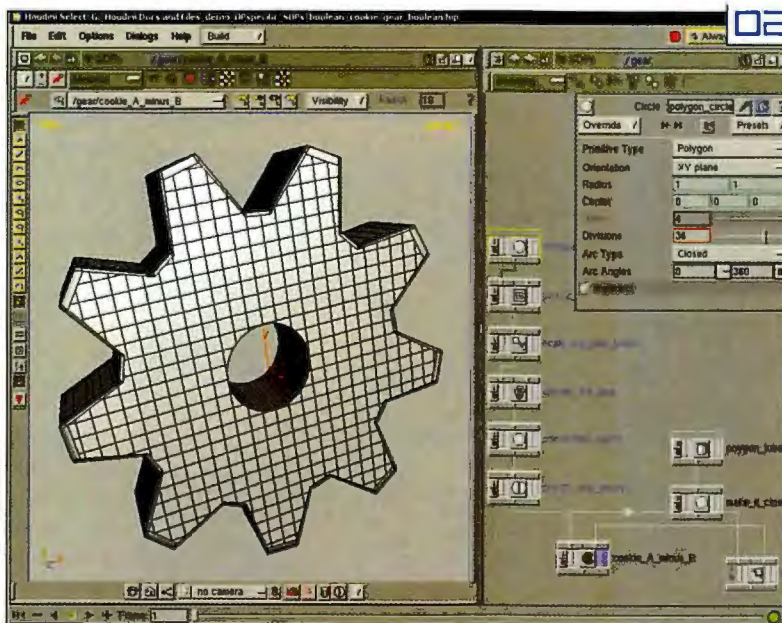
Which means that, as a standalone program, *Select* doesn't really make much



sense. At this price point, smaller companies will be much more inclined to buy *Cinema 4D XL*, *LightWave* – and now *Maya*. All these applications function more simply, are easier to use, and provide you with intuitive UV texturing and character tools.

Admittedly, *Select* beats them all in terms of power and flexibility – and it's the true procedural nature of the program that makes this possible. However, the program really only shines when in a demanding high-end animation environment, so if you're producing architectural stills, flythroughs, product visualisation or flying logos – and especially character animation – you're still better off with the competition.

For those currently using *Houdini 5*, *Select* is a no-brainer, and Side Effects is sure to sell some extra seats to the already-converted. But if you're a newcomer, and not bothered about working in a true procedural 3D package, you'd be better off looking elsewhere.



PROS

- True procedural animation system
- Much improved 'immersive' interface
- Can open *Houdini 5* files complete

CONS

- Simple tasks can be difficult to accomplish
- Still expensive compared to competition
- No particles or character rigging tools

Cinema 4D ART 7

And, lo, illustrators across the land rejoiced! For Maxon Computer had provided a robust 3D art package stripped of all those tedious animation functions...

BY ADAM WATKINS

PRICE \$695
(£549)

SUPPLIER
Maxon Computer

CONTACT
(01525) 718181

WEB
www.maxon.net

MINIMUM SYSTEM

- PC
Windows 95/98/2000/NT,
64MB RAM, 20MB HD
- Mac
OS 8.6 or higher, including
OS X, 64MB RAM, 20MB HD

MAIN FEATURES

- Fully featured modelling, including NURBS and subdivision surfaces.
- Fully featured texture packaging, including *Smells like Almonds* procedural shaders.
- Robust lighting scheme: volumetric, visible, inverse volumetric, and global illumination.
- Radiosity rendering: image-based lighting sources.
- Multi-pass rendering for endless tweaking without re-rendering.
- Ability to render stills at up to 16,000 x 16,000 pixels

[01] Although mastering its modelling techniques takes some time, using *C4D ART*'s fully functioning tools will enable you to create complex organic shapes just like this.

[02] Among the included bhodiNUT *Smells Like Almonds* procedural textures is Cheen, for creating quick and interesting electron microscopy effects.

Maxon Computer is behind some of the most powerful, yet least known, tools in the industry.

Cinema 4D XL, its flagship product, remains the most underrated animation package around, while *XL*'s sister app, *BodyPaint 3D*, has been making splashes with more than just the Maxon faithful. Its compatibility with *3ds max* and *LightWave* has helped Maxon secure an ever-swelling global fanbase. Now, with the release of its non-animation package, *C4D ART 7*, that fanbase looks to set to broaden still further...

Note, however, that this is more *C4D Illustration* than *C4D XL Lite*. And the toolset isn't some whittled-down collection for amateurs that gives you just enough functionality to know what you're missing. There may be no animation tools, but *C4D ART* is a fully functioning modelling, texturing and rendering package that creates beautiful images of pristine quality. It really is a 3D illustrator's dream – but you have to put the work in to get the most from it. Be warned: this is not for the faint-hearted.

MODEL FEATURES

Not a lot has changed in *ART*'s modelling capabilities from version 6. Still present is



C4D's version of subdivision modelling: Hyper NURBS. Also present is *C4D*'s neat variation of NURBS capabilities and parametric primitives – using methods like point-by-point construction, you can create almost any shape with ease. For folks with experience of other modelling packages, *C4D ART*'s modelling tools are intuitive and easy to learn.

One new tool worth mentioning is Poly Reduction, which optimizes complex forms painlessly. This is especially useful for novice users who haven't mastered

polygon economy, or for those who simply don't like a heavy poly count getting in the way of their workflow. Also available is a new ExplosionFX tool that helps create explosion effects far superior to your typical explode-the-polygons tool.

TEXTURE EDITING

C4D ART 7 comes with the powerful and much acclaimed bhodiNUT *Smells Like Almonds* (SLA) shaders built in. These procedural textures enable you to emulate true translucency, create fantastic-looking glass, and include some fun effects, such as an electron microscope image. Don't let the default settings fool you, though. With some manipulation, *Smells Like Almonds* can also help you create an amazingly diverse range of textures, from rice paper to brushed metal or felt.

Still available is *C4D*'s highly intuitive Materials editor, which enables an illustrator to quickly create and edit a wide variety of custom textures. You can fill channels with procedural shaders or with customized bitmaps – and texture placement is easily the most intuitive of any major 3D package. In addition, *C4D ART* works with *BodyPaint*. Although the latter is a considerable extra investment, its BodyPainting is something every 3D person should try for themselves. The effects can be amazing.

Sophisticated textures that render with blurred reflections and blurred transparency are also available in *C4D ART*. They come with a hit in rendering time, admittedly, but help remove that 'computery' look from much computer-generated imagery.

RENDERING POWER

But it's in rendering that version 7 reveals its proudest new features. Caustics and true radiosity (see Figure 5 and Figure 6) are a standard part of the rendering toolset, so now the ability to create near-photorealistic imagery is available without





03



04



05

THERE IS MUCH TO ADMIRE ABOUT *CINEMA 4D ART*. IF YOU CAN IMAGINE IT, YOU CAN CREATE IT. IF YOU CAN SEE IT, YOU CAN RENDER IT...

the need to buy any extra plug-ins or modules. Add to this the ability to employ global illumination and image-driven lighting, and *C4D ART* appears to lack very little. However, although most of its rendering algorithms are among the fastest in the industry, radiosity remains a slow process.

Another new feature is multi-pass rendering. Perfect for illustration, this feature enables you to render an image in up to 22 layers. You can then adjust these layers in *Photoshop*, changing the colour or characteristics of attributes – such as

shadows, reflections, illumination maps or specular highlights – with ease. Now there's no need to endlessly re-render for every minor adjustment – you can simply tweak your image easily and quickly in *Photoshop*. In this respect, multi-pass rendering makes rendering using radiosity a far more practical option.

PROS AND CONS

There is much to admire about *C4D ART*. If you can imagine it, you can create it. If you can see it, you can render it. It can create photorealistic images, or stylised experiments in design. The modelling tools are powerful, and with a bit of work and fine-tuning, you can create incredible forms, particularly with the *SLA* shaders. But in the end, it's the rendering tools that make version 7 worth upgrading for. Radiosity, global illumination, blurred reflections and blurred transparencies are all provided – for less than the cost of most radiosity render engines alone.

Unfortunately, such power comes at the price of a steep learning curve – terms like Stochastic Samples, Oren-Nayer, Stupl, Displace Voroni and Naki are hardly intuitive – and for best results you will need to refine your modelling technique. But it will all be worth it in the end. With the power of *SLA* shaders and those radiosity capabilities, Cinema 4D ART 7 can be eye-poppingly good.

[03] *Smells Like Almonds* – and particularly Cheen – was used to create every texture in this room. Although somewhat cryptic, *SLA* is tremendously powerful. Image by John Carrola, Jr. and Desiree Dutro-Maher.

[04] Caustics is free as part of *C4D ART 7*. It allows for the focusing and refocusing of light through transparent materials, such as glass and liquids.

[05] Radiosity is also a free part of *C4D ART 7*, calculating reflected light in ways that raytracing engines cannot. This scene was rendered with no light sources – just a luminous plane.

[06] Using and mastering the Radiosity settings enables you to create not only photorealistic imagery, but imagery that is more illustrative in style.



06

3Dworld Verdict



PROS

- Fully functional modelling, texturing and lighting
- Fast multi-pass raytracing
- Radiosity and caustics

CONS

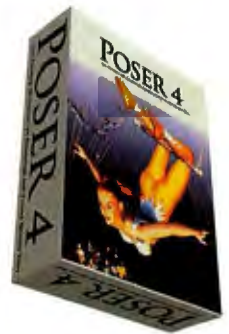
- Radiosity is time-consuming
- Steep learning curve
- Non-intuitive upper level settings

The New Face of Poser

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Facial Studio

Time to face facts – creating the perfect mug has never been easier

BY PETE DRAPER

PRICE \$499
(£347)

SUPPLIER
Di-O-Matic

CONTACT
info@di-o-matic.com

WEB
www.di-o-matic.com

MINIMUM SYSTEM

- PC
Intel-compatible 300MHz or greater, Windows NT4 (SP4), 2000 or 98, 128MB RAM, 50MB HD, OpenGL graphics card

MAIN FEATURES

- Parametric mesh
- Skin shader and composite material
- Phonemes generator
- Compatible with UVW mapping and MeshSmooth
- Muscles-based deformations

Facial Studio is a simple-to-use 3ds max 4 plug-in that enables you to create the perfect base head model – a simple parametric mesh which you can easily tweak and deform for superb results. The mesh itself allows for any possible deformation, with seams, folds and creases automatically put in all the right places as you mould your figure. Alongside the main head mesh are other useful elements, such as teeth, tongue and eyes (complete with iris).

To deform the mesh into a shape other than the default one (which is a combination of male, female, anime and caricature), you simply select Sub-Objects and amend the parameters – thereby pushing, pulling, deforming, scaling and moving the selected attribute to the right shape.

It really is that simple. From start to finish, we managed to shape the base head mesh to something that resembled our editor's own noggin [*Cheeky – Ed.*] in a matter of minutes – something that would have taken hours to perfect had we been using a non-parametric equivalent.

CREATE THE PERFECT BASE HEAD MODEL IN MINUTES

To help guide the user to the required facial attributes, the *Facial Studio* primitive is broken up into Sub-Object categories. Some knowledge of anatomical terms and definitions is helpful here, especially for the nose – but even without this knowledge you can pretty much hit the ground running, thanks to Di-O-Matic's concise online help guide.

Of course, you can tweak and modify all the presets, as well as extra features

(Anime, Asian, East European, Fat, Muscle, Young, Old, and so on) to your liking. Once your head is shaped up, it's quite amusing to tweak these settings to see

how your creation looks under such unusual circumstances.

TALK TO THE HAND

Animation is straightforward: phonemes in the form of spinners make lip-synching a breeze, and there's a library of basic expressions – sadness, anger, disgust, surprise – to expedite the modelling process. However, tweaking these has a



PICTURE COURTESY OF: Di-O-Matic (Artist: Laurent Abecassis)

considerable effect on keyframes, so manually amending these can be a little difficult. The software is also compatible with *Ventriloquist*, *FatLips* or *Magpie*: the data is simply imported and converted to *Facial Studio*'s LipSync deformations.

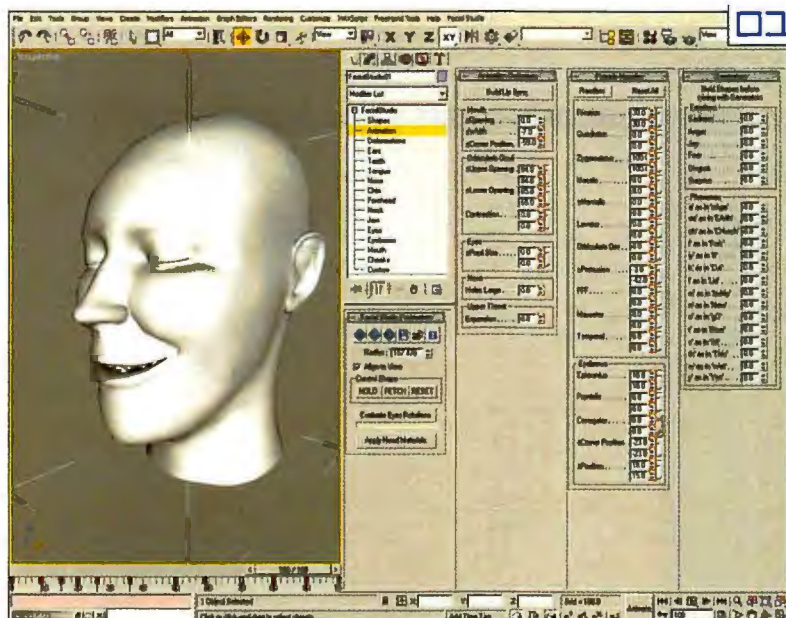
In short, Di-O-Matic's software is a truly powerful piece of kit. If you're someone who considers stock body parts only a slight step up from 3D clip-art, think again. The sheer number of animatable and deformable parameters, concisely organised for maximum flexibility, will surely win you over. But while easy to use, hardened modellers and animators may find the mesh a little limiting (if you want to add or remove eyes, for example).

Still, the speed with which you can create a head is second to none. And realistic skin shaders and materials, which mimic skin more effectively than *max*, make it worth the price tag alone.



[01] Animation is simple: by amending a few spinner settings over a series of frames, you can produce convincing lip-synching animation in next to no time.

[02] Fashion your own skin materials using *Facial Studio*'s built-in material shader. This simulates skin more accurately than Phong or Blinn shading.



PROS

- Ease of use • Parametric creation and amendment • Additional skin shader
- Organised layout

CONS

- Some problems with Undo
- Amending Generator spinners can occasionally result in loss of expressions

COMPLETE REVIEWS GUIDE: 24 issues at a glance

hardware

PRODUCT	SUPPLIER	CONTACT	PRICE	VERDICT	ISSUE
3D80XX S2	Reality Computing	+44 (0)1483 202051	£4,694	3.5	21
Armari RX860HT	Armari	+44 (0)208 993 4111	£4,700	4.0	24
ATI Radeon 64MBDDR VIVO	ATI Technologies	(011) 498 966 5150	£160	4.0	11
Dell Precision M40 3D laptop	Dell	+44 (0)870 907 4155	£2,184	4.5	23
ELSA Gladiac 920	ELSA	+44 (0)800 563 445	£298	4.5	15
ELSA Gloria DCC	ELSA	+44 (0)800 563 445	£800	3.5	18
ELSA Gloria III	ELSA	+44 (0)800 563 445	£799	4.5	16
ELSA Synergy 2000	ELSA	+44 (0)800 563 445	£180	4.0	19
Freeform	SensAble Technologies	+1 (781) 937 8315	\$21,450	4.5	02
Fuji Finescan 2750	Creative Publishing Solutions	+44 (0)1242 285 100	£6,500	4.5	17
Gateway Solo 9300 XL	Gateway	+44 (0)800 973 132	£2,399	4.0	08
IBM Spaceball 4000	IBM	+44 (0)800 169 1460	£360	3.5	15
Iomega MO 1.3	Iomega	+41 22 879 7000	£206-217. £15.99 per 1.3 GB cartridge	2.0	12
Iomega Peerless	Iomega	+41 22 879 7000	£117 (10GB USB bundle), £308.33 (20GB)	3.0	17
Iomega Predator CD/RW	Iomega	+41 22 879 7000	£192 (USB)	3.5	17
Iomega Jaz 2GB	Iomega	+41 22 879 7000	£229. £211 for 3.2 GB cartridges.	3.5	12
Max Black Storm3 K7 MP	Max Black	+44 (0)1763 245 757	£4,224	4.5	18
MaxPac 6000	Maxvision Corporation	+ (256) 772 3058	£4,825	4.0	13
Medea Video Raid RT	Medea Corp	+44 (0)20 818 597 7645	£1,560 / \$2,495	4.0	01
Minolta VI-700	Minolta	+44 (0)1908 200 400	£16,500 / \$24,750 (ex VAT) (Platter extra £2,500 / \$3,750 (ex VAT))	3.0	05
Oxygen 420 Card	3D Labs	+44 (0)1784 470 555	\$2,099	4.0	09
Pure	Advanced Rendering Technology	+44 (0)1223 563 854	£2,499	5.0	20
Silicon Graphics 230	SGI	+44 (0)870 423 2243	£3,750	4.0	03
Sony Valo PCG F809K	Sony	+44 (0)990 424 424	£2,809	2.5	08
Voodoo 5500	3dfx	+44 (0)1753 502 800	\$299.99	2.5	04
Wacom Intuos Tablet	Wacom.com	+44 (0)20 341 5521	A3 £609, A4 £365	4.0	06
Wacom Intuos 2 Tablet	Wacom	+44 (0)20 7744 0831	£354	4.5	22
Wacom PL500 Interactive Display	Wacom	+44 (0)20 8358 5858	\$3,999	2.0	11
Wildcat II 5000	3Dlabs	www.3dlabs.com	£1,028	3.5	20
Wildcat II 5110	3Dlabs	+44 (0)1784 470 555	\$2,530	4.0	13

software

PRODUCT	SUPPLIER	CONTACT	PRICE	VERDICT	ISSUE
3ds max R4	Discreet	+44 (0)20 7851 8000	£2,695	4.5	10
Adobe Photoshop 6	Adobe Direct	+44 (0)131 458 6842	\$609	4.5	05
After Effects 5.5	Adobe Direct	+44 (0)131 458 6842	£499 (Standard)	4.0	24
AIST Movie3D	HiSoft	+44 (0)1525 718181	£129	3.5	18
Amapi 3D 6	Computers Unlimited	+44 (0)20 8358 9235	\$399	3.5	14
Art*lanis 4.0	Gomark	+44 (0)20 7610 8686	£384	3.5	13
Aura 2	NewTek	+33 557 262 262	£510	4.5	10
Avatar Lab	Curious Labs	+001 831 462 8901	\$99	3.0	22
Axel 1.0	Mindavenue	+1 514 271 4774	£1,167	4.5	18
AXELedge 1.5	MindAvenue/Gomark	+44 (0)20 7610 8686	£720	4.5	23
Bodypaint 3D	HiSoft	+44 (0)1525 718181	£395	4.5	08
Boujou 1.2	Zd3 Ltd	+44 (0)1865 811061	\$10,000	4.5	17
Bryce 5	Computers Unlimited	+44 (0)20 8358 5857	£195	4.0	16
Character Studio 3	Discreet	+44 (0)20 7851 8000	£995	4.5	08
Cinema 4D NET	HiSoft	+44 (0)1525 718 181	£86.38 / £629 / £1,497	4.0	06
Cinema 4D XL6	HiSoft	+44 (0)1525 718 181	£1,187 / \$2,195	4.5	01
Cinema 4D X7	HiSoft	+44 (0)1525 718 181	£1,188	4.5	14

software continued...

PRODUCT	SUPPLIER	CONTACT	PRICE	VERDICT	ISSUE
Combustion	st@c media	+44 (0)1483 549375	£2,295 / \$3,495	4.0	04
Cult3D	Cycore	+44 (0)20 8883 9330	\$500 p.a.	3.5	12
D Joiner	D Vision Works	+44 (0)1235 437 109	£300	3.5	20
D Sculptor	D Vision Works	+44 (0)1234 437 109	£500	4.0	11
Deep Paint 3D + Texture Weapons	Keoti	+44 (0)20 7482 4858	£995 ex VAT	4.0	05
DFX+	Zen Computer Services	+44 (0)905 94 4280	\$695	4.5	10
Director 8.5 Shockwave Studio	Computers Unlimited	+44 (0)20 8358 5857	£949	4.5	17
ElectricImage Universe	Gomark	+44 (0) 20 7610 8686	£1,388	4.0	15
ETShadPro R4/E	Expression Tools	info@expressiontools.com	\$1,399	3.0	16
FILMBOX 3.0	Kaydara	+1 514 842 8446	£3,382	4.5	19
FILMBOX Studio 2.7	Kaydara	+1 514 842 3355	\$5,000 - \$30,000	4.5	11
Hash Animation Master 8.5	Hash, Inc.	+1 360 750 0042	\$299	4.0	12
Houdini 4.0	Techimage	+44 (0)1367 253 868	£10,950	4.5	02
Illusion: the magic of pixels	Impulse, Inc.	+1 800 328 0184	\$299	4.0	12
Ispace	guildsoft	+44 (0)752 895 100	\$99	4.0	03
LightWave 6	PAR Services	+44 (0)20 7439 3270	\$2,495	4.5	01
LightWave 6.5	Gomark	+44 (0)20 7731 7930	£1,599	4.5	07
LightWave 3D 7	Gomark	+44 (0)20 7610 8686	£1,982	4.0	19
Lunar Cell	Flaming Pear	+1612 253 8400	£14	3.5	09
MatchMover Pro 2.2	RealVIZ	+001 415 615 9800	\$4,999	4.0	24
Maya 3.0	Alias Wavefront	+44 (0)1494 441 273	\$16,000 / \$7,500 / \$2,995	4.5	01
Maya 3.0 for Linux	Alias Wavefront	+1 416 362 9181	£1,850 / £6,000 / £12,950	3.5	17
Maya 3.5 Mac	Alias Wavefront	+44 (0)1494 441 273	£6,360	4.0	20
Maya 4	Alias Wavefront	+44 (0)1494 441 273	£6,360 / £13,560 / £2,580	4.0	15
Merlin 3D	Digital Immersion Software	+1 705 522 7991	\$595	3.5	14
MojoWorld Generator	Pandromeda	www.pandromeda.com	\$249	4.0	19
PIXELS 3D 4.0	PIXELS 3D	www.pixels.net	\$599	3.5	22
Poser Pro Pack	Computers Unlimited	+1 831 462 8907	\$199	4.0	09
Quest3D	Act3D	+31 71 514 77 99	£174	3.5	20
Real Viz JPF	Graphic Domain Limited	+44 149 451 5500	\$5000 / £3,500 / \$800 / \$12,000	4.5	04
RealFlow 1.3	NextLimit	+44 (0)1444 232 000	\$595	4.0	02
RealSoft 3D 4	Realsoft Graphics	+358 3 471 8390	£432 / £216	4.0	07
RealWave	NextLimit	+44 (0)1444 232 000	\$245 (+\$500 for RealFlow)	4.0	02
Reelmotion 1.0.4	Motional Realms	+1 602 230 1300	\$795	4.5	03
Rhinoceros 2	Aztec CAD Ltd	+44 (0)20 7987 6453	£544	4.0	17
SCS2	Cryonetworks	+44 (0)1625 539 494	£266	3.5	11
Shave and a Haircut	Safe Harbor	+1 800 480 5777	\$285	4.5	04
Softimage XSI	Softimage	+44 (0)1753 655 999	(\$11,995 / \$7,995	4.5	01
Softimage XSI 1.5	Softimage	+44 (0)753655999	£7,995 / £11,995	4.5	09
Softimage XSI 2.0	Tyrell	+44 (0)20 7343 5500	\$12,300 / \$8,200	4.5	19
solidThinking 4.1	Gomark	+44 (0)20 7731 7930	£1,737	3.5	09
Stitcher 3 Mac	REALVIZ	+33 4 92 38 84 60	£568	5.0	17
Swift 3D 2	Electric Rain	+001 303 543 8230	\$159	4.5	24
Strata 3Dpro RME	Gomark	+44 (0)20 7610 8686	£713	4.0	23
trueSpace 5	Guildsoft	+44 (0)1752 211 313	£655	4.0	11
Video Toaster	Graphic Domain Limited	+44 (0)494 515 500	£1,995	3.5	02
VR4MAX	Tree C Technology	+31 (0)30 656 9600	\$2,200	4.5	21
Vue d'Esprit 4	Maxon Computer	+44 (0)1525 718 181	£164	2.0	23
World Builder 3	Digital Element	+1 510 451 8020	£399 / \$999	4.0	20
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CONTENT TO: jim.thacker@futurenet.co.uk

movers & shakers

Job moves, contacts and big contracts: Movers & Shakers is your window on the 3D industry, showing who's doing what and where

MOVERS

THE MILL is to establish a New York base for its commercials visual effects business. Initially, The Mill in New York will be located within **OUTPOST DIGITAL**, a DV editing facility on the outskirts of Soho, and will include two *flame* suites, plus several 3D stations. A mixture of British and US talent will be recruited to staff the venture, which should be fully open by the beginning of May.
www.millfilm.co.uk

SMOKE & MIRRORS has acquired two of London's leading effects artists to strengthen its flame team.

TONY LAWRENCE, co-founder of Clear Post Production, previously worked on Robbie Williams' award-winning Rock DJ video, while Mill Film veteran **HANI**

ALYOUSIF was responsible for some of the most memorable effects sequences of recent years, including the tiger-fighting scene from *Gladiator* and the helicopter crashes in *Black Hawk Down*.
www.smoke-mirrors.co.uk

LA/San Francisco effects house **RADIUM** has appointed **ANDREW ORLOFF** head of CG at its Los Angeles facility. Formerly of 525 Studios (now R!OT), Orloff first came to Radium as a freelance visual effects artist before officially joining the company in January. He's joined by fellow 525 alumnus **STEVE MEYER**, who previously worked on *Armageddon* and *Blade*.
www.radium.com

WHAT DO YOU DO, THEN?



PAUL BRANNON

AGE: 25

JOB TITLE: Render Wrangler

AT: The Moving Picture Company

URL: www.moving-picture.com

3D WORLD: So what's a Render Wrangler when it's at home, then?
Basically, someone who ensures the smooth running of the render farm.

3D WORLD: What does a typical day involve?

As with most people these days, it begins with trawling through emails. After that, I set up the render farm for the morning, allocating CPUs to animators/compositors when requested. To ensure that renders are completed within deadline, I use a Pixar tool called *Allred*, which distributes them over our network. Aside from that, I do general data processing, archiving finished jobs and laying stuff down on tape.

3D WORLD: Do you enjoy the job?

I guess I look upon it as a kind of paid university degree. The facilities and software are state-of-the-art, and there are so many animators here whose brains I can pick for pearls of 3D wisdom. From that point of view, I couldn't ask for more – as any newbie will attest, there's nothing more frustrating than banging your head against a brick wall because you can't get something to work.

3D WORLD: But it must have its downside, too, right?

The pay isn't all that great, and there's no such thing as a nine-to-five day. Working weekends is not uncommon – night shifts, too, when large renders need to be supervised. Probably the worst thing is the lack of time I get to spend actually learning the software; at the end of a long day, the last thing you want to do is sit melting your brain with the kind of quantum anomalies *Maya* can throw at you!

3D WORLD: And how did you become a Render Wrangler?

I spent two years on the other side of the fence, doing visual effects video assist for feature films. After that, I became a runner here and taught myself on the job.

3D WORLD: What advice would you give to anyone who wants to follow in your footsteps?

Just be persistent. Luck and timing have something to do with it, but determination is the key. Be prepared to sacrifice your social life – and the pub!

3D WORLD: And where do you hope to be in five years' time?

Working on *Toy Story 4*. Either that, or in a Buddhist monastery in some remote Japanese province...

SHAKERS

BLUE SKY STUDIOS

Following the box office success of *Ice Age*, Blue Sky Studios has announced development on its next film, provisionally entitled *Robots* and based on a book by cult children's author/illustrator William Joyce (www.harperchildrens.com/williamjoyce/homepage.htm). According to *Variety*, the studio has already completed preliminary storyboarding and visual development on the project.
www.blueskystudios.com

DISNEY

Disney is to lay off up to 265 employees at its Burbank facility, *The Los Angeles Times* reports. The cuts, which will reduce staffing levels to about 1,000 by May 2003, are part of Disney's ongoing downsizing of its animation business. The company maintains that it is not moving out of traditional animation entirely.
www.latimes.com

DREAMWORKS

DreamWorks has announced that the next project for Vicky Jensen, director of recent Oscar-winner *Shrek*, will be *Sharkslayer*, an "undersea mob comedy". The film, voiced by Will Smith, Angelina Jolie, Renée Zellweger and James Gandolfini, teams Jensen with Eric "Bibo" Bergeron, co-director of *The Road to El Dorado*. *Sharkslayer* will be the first all-CG-animated film to be produced at DreamWorks' Glendale facility and is scheduled for release in 2004.
www.pdi.com



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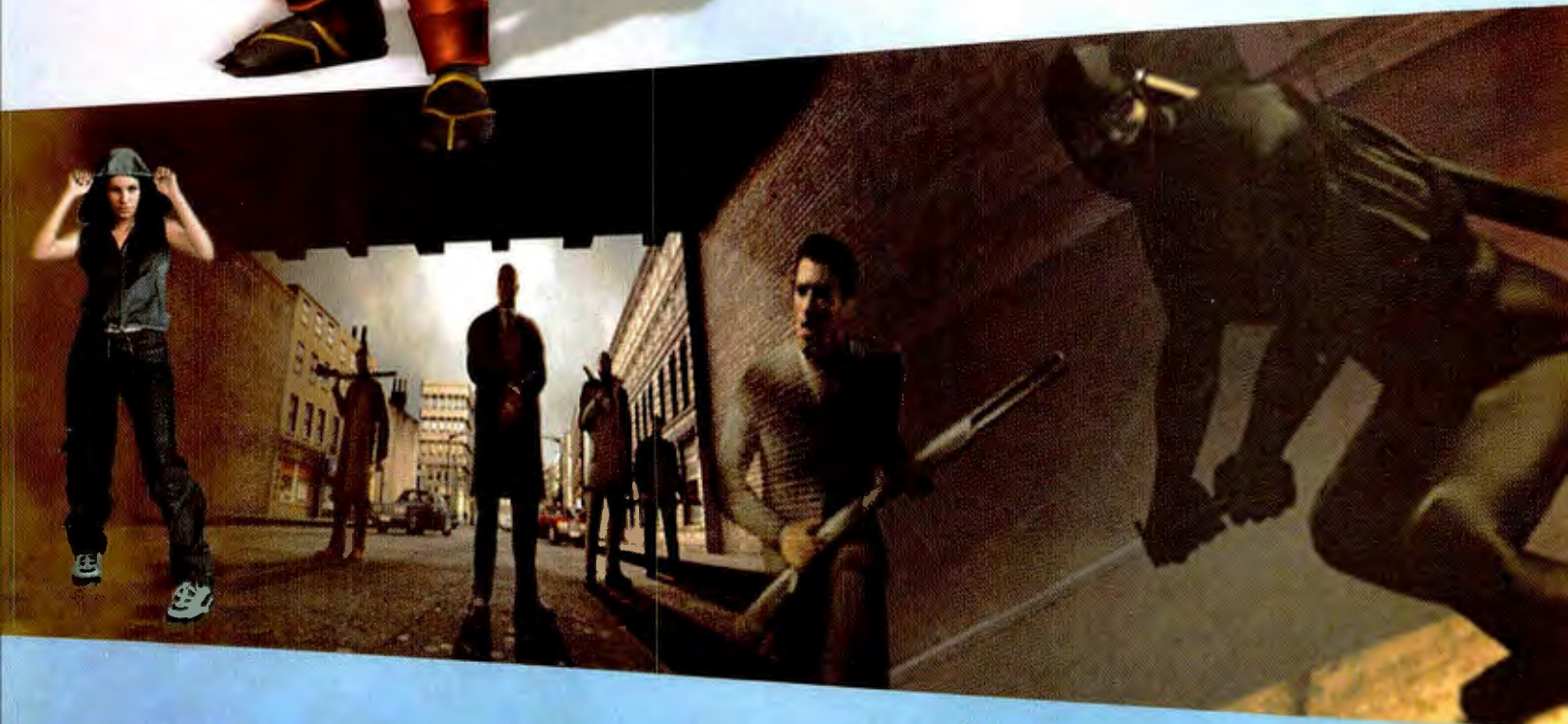
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EXHIBITION

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[08] MICHAEL BRENNAN
VALENTINE-ROSE
Animation Master and Photoshop
mike@focuschaos.com
www.focuschaos.com

**EXHIBIT YOUR CREATIONS!**

If you're an up-and-coming 3D artist, our Exhibition section is the place to showcase your work. As of Issue 26, we'll be adding a brief description of how each image was created, so be sure to include a brief text (.txt) file with your portfolio, explaining who you are, what you do, what inspires you, what challenges you faced in creating the image, and what software you used. Please don't just send a covering letter – we tend to lose those!

SUBMISSION GUIDELINES

- Images must be rendered at print resolution (ideally, at least 3,000 pixels wide or high)
- Images under 500 pixels in size or resized in *Photoshop* can NOT be used in the magazine
- Always include a text (.txt) file with your images containing your name and contact details
- Always also include 200-300 words of supporting text (see paragraph on left)
- Files under 3MB in size can be e-mailed to 3dw.exhibition@futurenet.co.uk
- Larger files may be sent on CD/Zip disk to: *3D World*, 30 Monmouth Street, Bath, BA1 2BW, UK

02



[02] **NICHOLAS BOUGHEN**
DUNE_BUGGY3
LightWave 3D 7.0b,
Photoshop 6 and Painter 6
nboughen@telus.net

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02



01



01



03

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Create an interactive artwork making use of *Quest3D*'s advanced shading capabilities and win some fabulous graphics hardware!

One of the beauties of modern graphics processors is their built-in real-time graphics capabilities. Once accessible only through

offline render farms, per-pixel and vertex shaders permit 3D artists to create a variety of complex lighting and surface effects. Characters can have facial hair and blemishes, for example, while wood acquires a realistic texture and grain.

And modern multimedia authoring software, such as *Quest3D* (www.quest3d.com), has been written to take advantage of this fact. Incorporating pixel and vertex shaders as built-in graphical building blocks, or 'channels', *Quest3D* places a variety of powerful real-time graphics effects at your fingertips, including realistic fur, water waves, cartoon shading and bump mapping.

To celebrate this fact, *3D World* has teamed up with *Quest3D* developer Act-3D and the NVIDIA Corporation, manufacturer of the new GeForce 4 graphics card. We're calling upon 3D artists throughout the world to create interactive artworks which make full use of *Quest3D*'s advanced shading functionality.

The exact subject matter is up to you, but our expert panel will be judging entries according to

their quality, originality, and the use of shaders, positional audio and interactive elements. The creators of the winning entries will receive the following fantastic prizes:

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3 An NVIDIA GeForce4 Ti4600 graphics card

In addition, all three winners will receive a free copy of the *Enterprise* version of *Quest3D* and a year's subscription to *3D World*. Honourable mentions will also receive a free licence for the non-commercial version of *Quest3D*.

You can find instructions for entering the contest below, and the special contest edition of *Quest3D* on this month's cover CD. To get you started, we've printed a tutorial for using the software on the right. Good luck!

HOW TO ENTER

The contest is open to any 3D artist throughout the world. All entries should be submitted in the form of executables published with the competition version of *Quest3D*, and uploaded to the competition Web site: www.quest3d.com/contest.

THE RULES

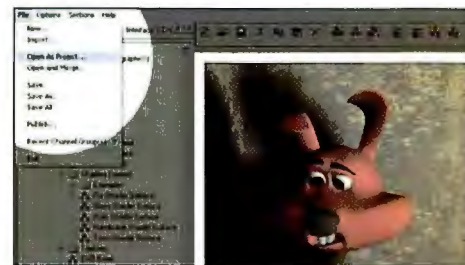
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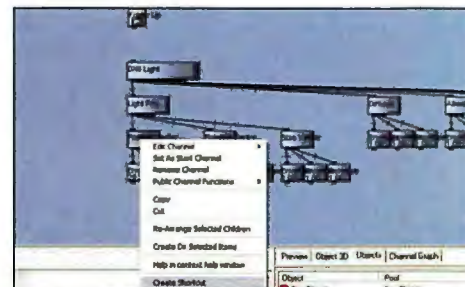
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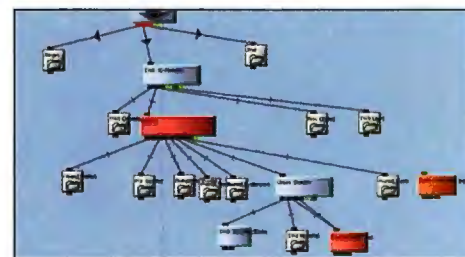
we show you how to...



Start *Quest3D* and select File > Open as Project to load *Start.cgr*. (In C:\Program Files\Act-3D - NVIDIA - 3D World\Quest3D PPSC\Tutorial\Htm\Bunny TutorialFiles; note that you'll have to unzip it first.) The file contains an imported bunny model and a background object. In this tutorial, we're going to replace the surfaces of the bunny with vertex and pixel shader surfaces. First, we'll add a colour map to the eyes.



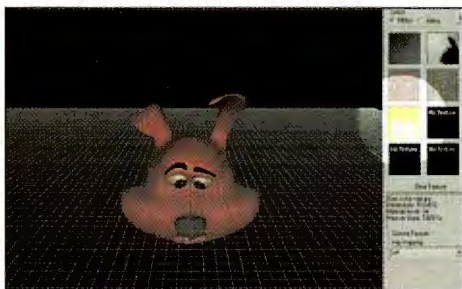
The fur shader now needs to know the position of the light. Double-click the folder DX8 Light (on the channel graph), then right-click while the cursor is over the channel labelled Position vector. Select Create Shortcut and drag the new shortcut into the folder Folder Up. Double-click the folder to go up one level and link the shortcut to the fur shader.



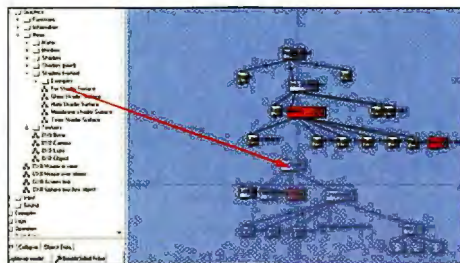
Back in the channels section, double-click Normal and select *Nose colour map.jpg*. Double-click Bumpmap and select *Nose Bump map.jpg*. Again, put the channels of the nose surface in a folder. Unpack the folder Rabbit.pupil and delete all channels connected to the object except for DX8 3D ObjectData. Add the Glass Shader Surface (from 'Shaders (vertex)') and connect it to the object.

use Quest3D's fur, glass and bump map shaders

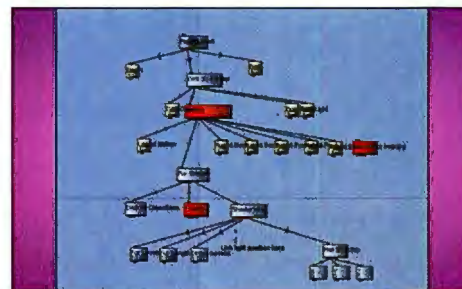
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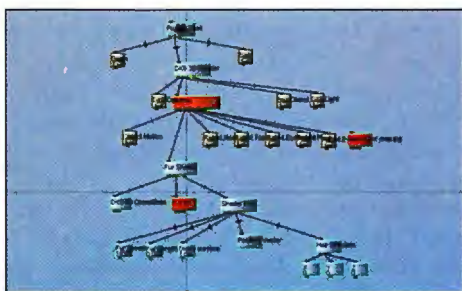
2 Press F3 or select Sections > Object to switch to the Object section. Select the bunny in the list on the right and the RabbitEyes surface in the list on the left. Click on an empty texture thumbnail and load Eyes colour map.jpg, then click the thumbnail again to apply it. Now select the texture tab on the left. In the drop-down list labelled Mapping, select Planar Z.



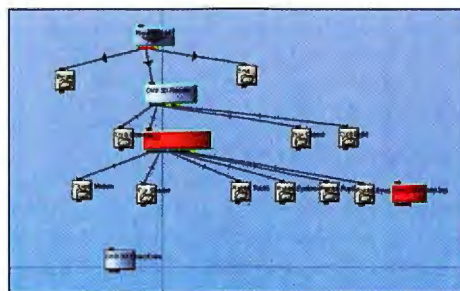
3 Press F2 or Sections > Channels to go back to the channel graph. Click the folder labelled Rabbit.fur and press Space to unpack it. Delete all the channels that are connected to the object, except the one labelled DX8 3D ObjectData. Now find the Fur Shader Surface in the 'DirectX 8.1/Graphics/Items/Shaders (vertex)' folder (on the left) and drag it to the channel graph.



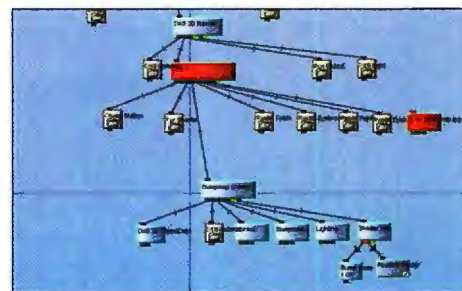
4 Link the fur shader surface to the object by dragging a line from the square at the top of the surface to the object. Delete the channel labelled DX8 3D ObjectData that is connected to the fur surface. (There should be two channels with this name, so watch which one you delete.) Link the new DX8 3D ObjectData channel to the fur shader surface.



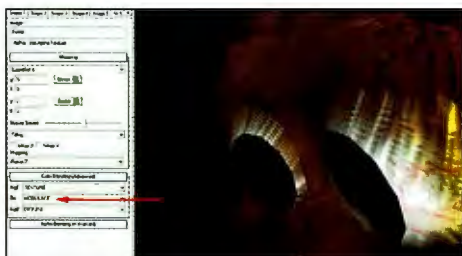
6 To see your current results, click on the Animation tab at the bottom-right of the screen. Double-click on the channel labelled Fuzzy and load BunnyFur.TGA as the new texture. Change the mapping of the fur texture to Planar Z using the same method you used to change the mapping for the eyes. (Press F3 first to go to the Object section.)



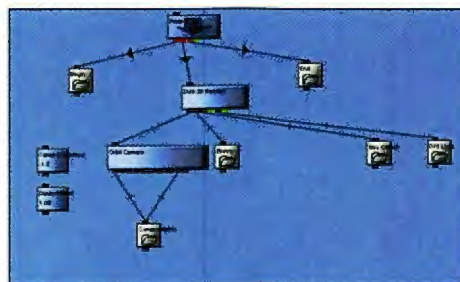
7 Press F2 to go back to the channel graph. Hold Shift while clicking Fur Shader to select the fur shader channel and all its children. Press Space to put them all in a folder, the name being taken from the channel under the mouse. Now select the folder Rabbit.nose and delete all the channels except for the one labelled DX8 3D ObjectData.



8 This time, drag the template labelled Bumpmapping (diffuse & specular) from the 'DirectX 8.1/Graphics/Items/Shaders (pixel)' folder. Again, create a shortcut for the position of the light source and link it to the Shader info channel. Go to the Object section to change the mapping of the texture to Cubic.



20 In the Object section, select the Glass Shader Surface. Click the Surface tab on the left to bring up the surface panel. Select No Transparency, then select Multiply as the Texture Blend mode. To exaggerate the glass effect, click the Texture tab, then Colour Blending (Advanced). Select MODULATE2X as the Op (Operator) for the texture blending.



21 Put all the channels for the Glass Shader in one folder and do the same for the entire object. Select the folder DX8 Camera and delete it. Add the template 3D Items/Camera/OrbitCamera. Link the new camera to the channel labelled DX8 3D Render. Double-click the channel labelled Camera Distance and change the distance to minus 1.5.



22 Unfortunately, the camera keeps moving even if we don't want it to. Add the template 'DirectX 8.1/Input/Mouse/Left Mouse button' and link it to the channel labelled Do Movement. Select File > Save As and save the file in an empty folder. Finally, select File > Publish – and press the Publish button to publish the project as an executable. Now pat yourself on the back!

Bunny

The month we examine Blue Sky's Oscar-winning short, featuring a cute old rabbit – and hot new rendering technology

BY MARK RAMSHAW

Currently enjoying box-office success with its debut feature *Ice Age*, Blue Sky Studios first showcased the radiosity-based rendering techniques that lend the movie such a warm visual style some four years earlier. The first CG short ever to feature such techniques, *Bunny* signalled Blue Sky's move away from commercials and into feature production – bagging the studio an Academy Award in the process.

"It was definitely seen as a dry run for feature work, as well as a way to get our talent off commercial work and onto something where they could stretch their legs" says Blue Sky lead animator Jim Bresnahan, who worked on the project. "And it was also a good way to make a calling card, a showcase for the next-level rendering technology which was the reason Blue Sky was founded in the first place."

BULB SWINGING

Written and directed by studio co-founder Chris Wedge, the idea had actually been simmering away as an R&D project for around five years before production officially began in early 1997. Jim recalls that the story was devised to fit the needs of the project.

"Chris came up with the idea for an environmental piece, with a dark kitchen with a single light bulb, using radiosity to bound

the light around the room," says Jim. "And he'd always wanted to do this mangy old bunny character, which was inspired by a 70-year-old children's book."

In fact, the bunny's personality – and the emotional significance of the struggle between bunny and moth which forms the film's core – did not evolve until later. "You'd expect there to have been a eureka moment, where everything fell into place to fit the finale, but in actual fact the ending didn't come until later."

Jim was one of 30 artists who contributed to the project, handling some animation and also working on R&D for the moth animation: "We worked as we generally do, starting with paper sketches, then making a clay sculpt of the bunny, going in with our scalpels until we got a good 3D figure, and finally going to the computer. With the bunny, a lot of work concerned the motion, arranging the skeletal structure inside and working out how she hobbled around her kitchen using a walker, or how she hopped. With the face, there were control points for everything, from the eyelids and brows to the nose – for twitching – and quite a few for the ears. The mouth was pretty limited, because she didn't need to talk."

Hand animation also extended to the apron. "We didn't use a cloth simulation," explains Jim. "Instead, it was set up with skeletal joints for animating. The apron probably had more

[01] Soft lighting, beautifully detailed characters, and a surprisingly touching story make *Bunny* a CG short quite unlike any other.

[02] Rather than create a cloth simulation system for the bunny's apron, Blue Sky chose to animate it completely by hand.

[03] [04] The short started out as an exercise in using radiosity to apply minimal lighting to a 3D environment.



1998

FACT
FILE

CREATED: 1998

BY: Blue Sky Studios

DURATION: Seven minutes

WEB:

www.blueskystudios.com

CONTACT: 44 South
Broadway, White Plains,
New York 10601, USA
001 914 259 6500

CREDITS: Ads for Braun, Blockbuster, Diet Coke, Nature's Resource, Quaker, Pepsi, Sylvania; movie effects in *Joe's Apartment* (1996), *A Simple Wish* (1997), *Alien Resurrection* (1997), *Star Trek: Insurrection* (1998), *Jesus' Son* (1999), *Fight Club* (1999), *Titan AE* (2000), *Ice Age* (2002)

SELECTED AWARDS:

ArtFutura award for *Joe's Apartment: Funky Towel* (1996); International Monitor Award for Best 3D Computer Animation for *Rayovac Fierce Creatures*; Silver Telly Award for *Bell Atlantic: Big Deal* (1997); Best Animated Short Film Academy Award for *Bunny* (1998); Prix Ars Electronica Gold Award for *Bunny* (1999)



02

controls than any other part of the model. Prior to *Bunny*, we hadn't used hair before, either, so we had to come up with an effective way to model soft fur. An off-the-peg solution wasn't an option. We keep the whole pipeline within [Blue Sky's proprietary package] *CGI Studio*, so it involves R&D to add things like fur."

RABBIT RENDERING

Although the technology for radiosity rendering had been in place for a number of years, it was never used on a publicly viewed project prior to *Bunny*. "It wasn't something we could use to render every frame, though. It's quite a prohibitive technique, requiring brute force rendering calculations, so we had to come up with shortcuts. In some instances, we'd enhance the lighting by rendering a frame with radiosity, then using that to bake the effects into the environment. Another method was to replicate the radiosity lighting by going back and placing area and soft lights into the scene. Our TDs are really expert at creating a



03



04



05

[05] What at first appears to be a simple comic tale of an old rabbit battling a moth in her kitchen has a surprisingly bitter-sweet pay-off, one that makes full use of the unique lighting capabilities of Blue Sky's *CGI Studio* renderer.

06



[06] Animating the rabbit's face posed certain technical difficulties. "There's no real mouth movement," says Jim, "so we did all the talking through the eyes." global illumination appearance, whether they've got the radiosity turned on or not."

While *Bunny* was undoubtedly groundbreaking, the critical acclaim it received still came as something of a shock. "The Oscar nomination was a surprise," says Jim. "Once you've got the nomination, you obviously know you've got a pretty good shot at winning, but even then we knew that *Geri's Game* from Pixar had won the year before, and so weren't sure that the Academy would go for another CG short."

Although Blue Sky Studios is already switching its focus to a second full-length feature, new short projects are already being discussed. "They make for an ideal proving ground for directors and other talent, and are great way to get the latest ideas and techniques out there on show," concludes Jim. "I definitely think there's a good chance we'll be doing more in the future."



Find out more about *Bunny* at http://bunny.blueskystudios.com/bunny_home.html. You can view the whole short at <http://movies.yahoo.com/movies/feature/bunny.html>

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TIPS & TUTORIALS
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creative advice

ISSUE

69

Britain's biggest-selling creative magazine • Mac & PC

In issue 69...

- > **Design for DVD** Cash in on the cutting edge of interactive design – tutorial and demo
- > **Flash MX reviewed** Could this be the ultimate Web design application?
- > **Scan & deliver** Expert tips on scanning for repro, Web, 3D and digital art

ON SALE MARCH 28

For more news, reviews and updates at www.computerarts.co.uk

SEND CD STUFF TO: matt.gallimore@futurenet.co.uk

Maya PLE

Full Product
Dual Format

Unleash the awesome power of *Maya* with this full non-commercial version

For years, many 3D artists have dreamed of owning their own version of *Maya*. Well, now they can, thanks to this *Personal Learning Edition*: a non-commercial version which provides access to the full toolset of *Maya Complete*. While there's no support for plug-ins – and all viewpoints, as well as final renders, are afflicted by a watermark – *Maya PLE* enables you to familiarise yourself with the functionality of an industry-standard 3D application at first hand.

PC: Pentium 600MHz, Win NT/2000/XP, 512MB RAM, 440MB HD, OpenGL graphics card

Mac: G4, OSX, 512MB RAM, 430MB HD, OpenGL graphics card

CONTACT: www.aliaswavefront.com



combustion 2.0

Demo
Dual format

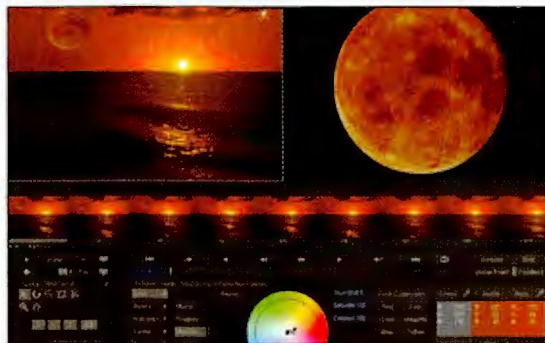
Experiment with the latest release of Discreet's leading compositing solution

Follow Bill Fleming's compositing tutorial (page 48) using the dual-format demo of Discreet's market-leading package, *combustion 2.0*, from our CD. This is the first time release 2.0 of *combustion* has made an appearance on a cover disc in Europe. Note: Under Windows XP, the installation halts because it cannot find the Sentinel driver – just click OK and it'll work fine.

PC: Pentium III 450, Win 98/NT4/2000, 256MB RAM, 2GB HD, Windows Media Player 7

Mac: G3 266, OSX 10.1, 256MB RAM, 2GB HD

CONTACT: www.discreet.com



Atmosphere

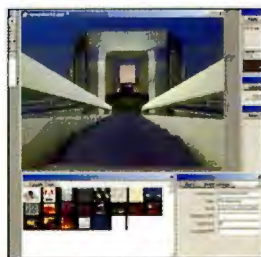
Beta
PC only

Create interactive 3D scenes for the Internet

Adobe's *Atmosphere* enables you to create and animate scenery and characters in a low-polygon format. *Atmosphere* is gaining widespread respect in a rapidly developing community.

PC: Pentium, Win 98/2000/Me, 64MB RAM, 50MB HD

CONTACT: www.adobe.com



DAZ3D

Three characters from
DAZ3D's wide *Poser* range

What do you get if you cross a gremlin, a camel and a faerie? We don't know, but that's exactly what we have for you on this disc. These characters need to be extracted from the Resources\DAZ folder on the disc to the relevant folder within *Poser*. Just for fun, we'd like to see your efforts at creating a scene using these three characters (and no others). Send your efforts in to us! Requires *Poser 4* and a system capable of running it.

CONTACT: www.daz3d.com



QUEST3D

Demo of the Per Pixel Shader Contest version of *Quest3D*. Check out the competition details on page 92.

EXHIBITION

A collection of 20 pics from around the globe. Send us your pics or animations.

3dw.exhibition@futurenet.co.uk

TUTORIALS

As usual, you'll find the full-sized screenshots and supporting files for our tutorials on the cover disc.

MOVIES

Check out the Inspiration section of the disc to see some fantastic animations.

USING THE CD

What if you need further assistance with the CD?

Please read the entry relating to the software you're trying to use before contacting us. If you still have a problem, contact our support department via one of the following methods.

EMAIL 3dworld.support@futurenet.co.uk

WEB www.futurenet.co.uk/support

FAX +44 (0)1225 732 279

TELEPHONE +44 (0)1225 442 244 (ext 2101)

At www.futurenet.co.uk/support you'll find a list of frequently asked questions and solutions to common running problems reported for our cover disc. This Web site is kept up-to-date and has links for downloading any material that might solve a potential problem.

Please email our support team at the dedicated 3D World email address quoted before trying to telephone. The lines can be very busy at times. We regret that due to the

complexity of the software on our CD we are unable to offer full support beyond installation issues. For more detailed inquiries, contact the relevant manufacturer direct.

WHAT IF I HAVE A FAULTY CD?

This is highly unusual, but if the fault is confirmed by our technical support team please return your disc to the following address and a free replacement will be with you within 28 days: Bluecrest International Ltd, Units 6, Avenue 1, Station Lane Industrial Estate, Witney, Oxon OX8 6XZ, UK.

CD
inter
active

the reality trap

There's so much more to art than the fool's gold of photorealism...

BY STEFAN MARJORAM

Can CG ever hope to replace 2D or model animation? It's a question I'm often asked (especially as I'm surrounded by clay animators). The assumption seems to be that CG is a superior technology, or a natural progression. But this is only true if you look at animation from the point of view of trying to emulate reality. Which is something computers are beginning to do fairly well, but...

Do Disney films and TV cartoons try to emulate reality? No. And neither, I feel, should CG, unless you're doing effects: that's what live action is for.

Cartoons, model animations and avant-garde films try to show what cameras can't: a caricature of a person's feelings and emotions expressed as art.

A similar thing happened with the invention of photography. People throughout the ages have been drawn towards trying to create – in stone, clay or paint – realistic images. The worth of painting was traditionally measured by whether or not it looked like the real thing. When the camera came along and seemingly made a perfect copy, what was to become of painting? Well, artists turned to showing the unfilmable – what's inside.

For me, 2D animation is still what I try to live up to. It has none of the limitations of gravity acting on a stop-motion figure or CG characters intersecting when pushed too far. It is limited only by what you can draw, and to put it quite bluntly, some people can draw bloody well.

Chuck Jones, Glen Keane and Richard Williams, for instance, can draw like the old masters. Of course there are a lot of other things that go into making a good film – acting, storytelling, design – but when you look purely at the movement, you can't beat 2D for fluidity and grace. Add to that a hundred years' worth of development and it's plain to see what a headstart these forms of animation have

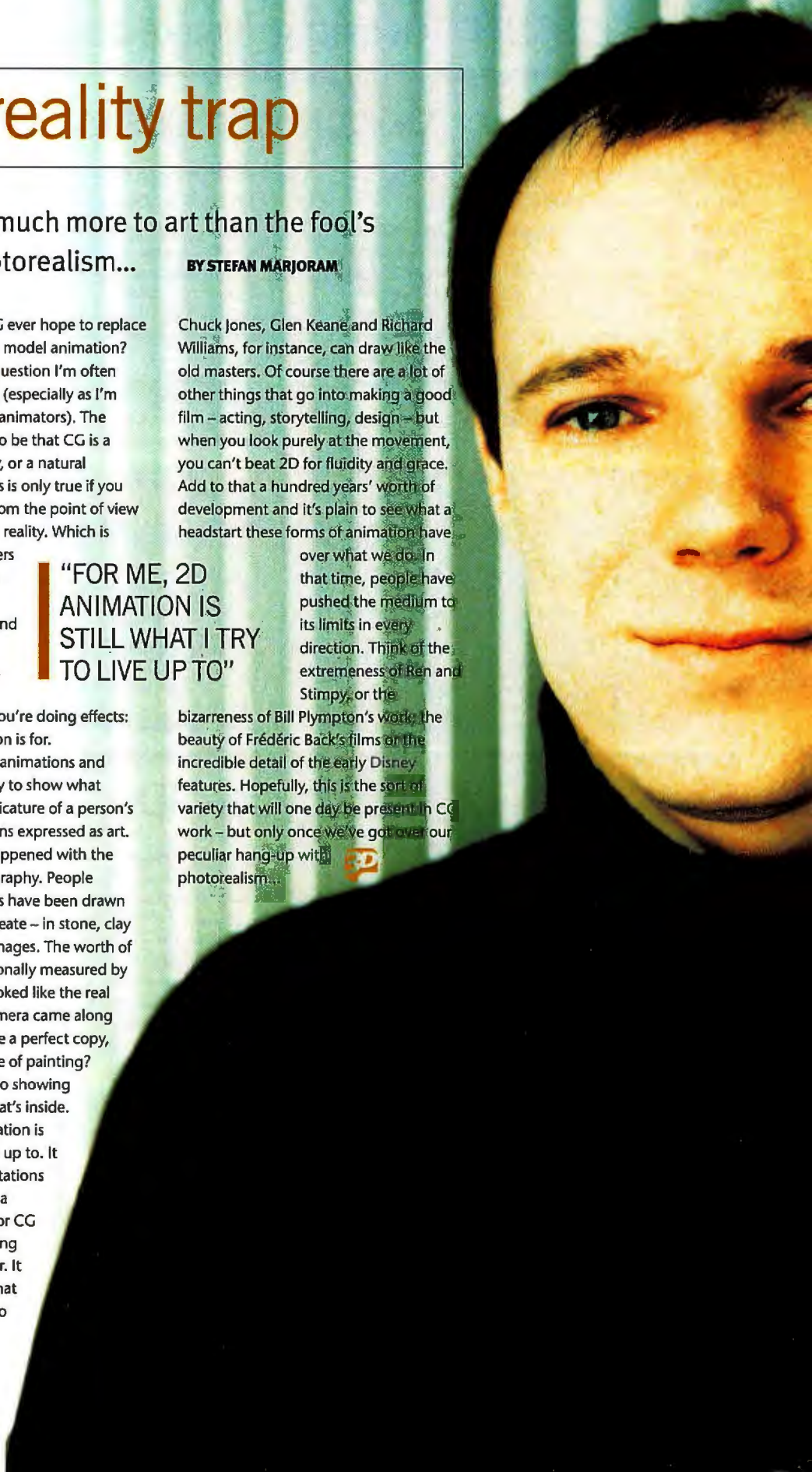
over what we do. In that time, people have pushed the medium to its limits in every direction. Think of the extremeness of Ren and Stimpy, or the

bizarreness of Bill Plympton's work, the beauty of Frédéric Back's films or the incredible detail of the early Disney features. Hopefully, this is the sort of variety that will one day be present in CG work – but only once we've got over our peculiar hang-up with photorealism...



STEFAN MARJORAM

is a CG animator/director at
Aardman Animations Ltd.
www.aardman.com



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RELEASE



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Jigsaw, Cancom, Gordon Harwood Computers, PC World.

The MAXON 3D range includes: CINEMA 4D XL R7 (£1395), CINEMA 4D ART R6 (£549), CINEMA 4D GO R5 (£169), BODYPAINT 3D (£479), CINEMA 4D ARTsuite (ART R6 + BODYPAINT 3D, £729), CINEMA 4D Production Suite (XL R7 + BODYPAINT 3D + C4D NET UCL, £1995), Dosch Design Products (from £39.95), Vue d'Esprit 4 (£169) and many supporting products such as books, training CDs etc. All prices are SRP and include VAT.

MAXON Computer Ltd, The Old School, Greenfield, Bedford MK45 5DE.

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Awards ceremony on
22 November 2001

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